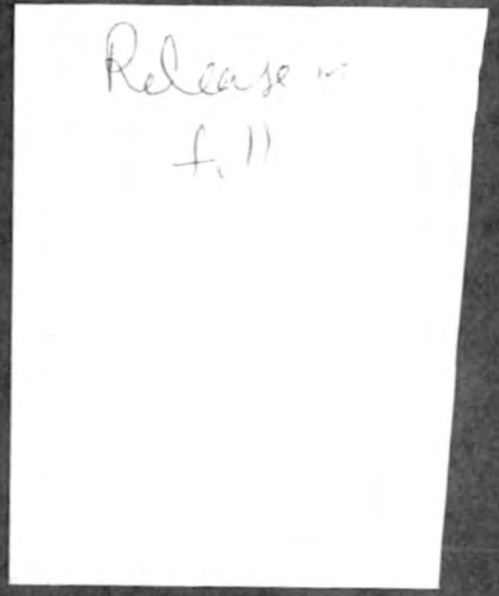
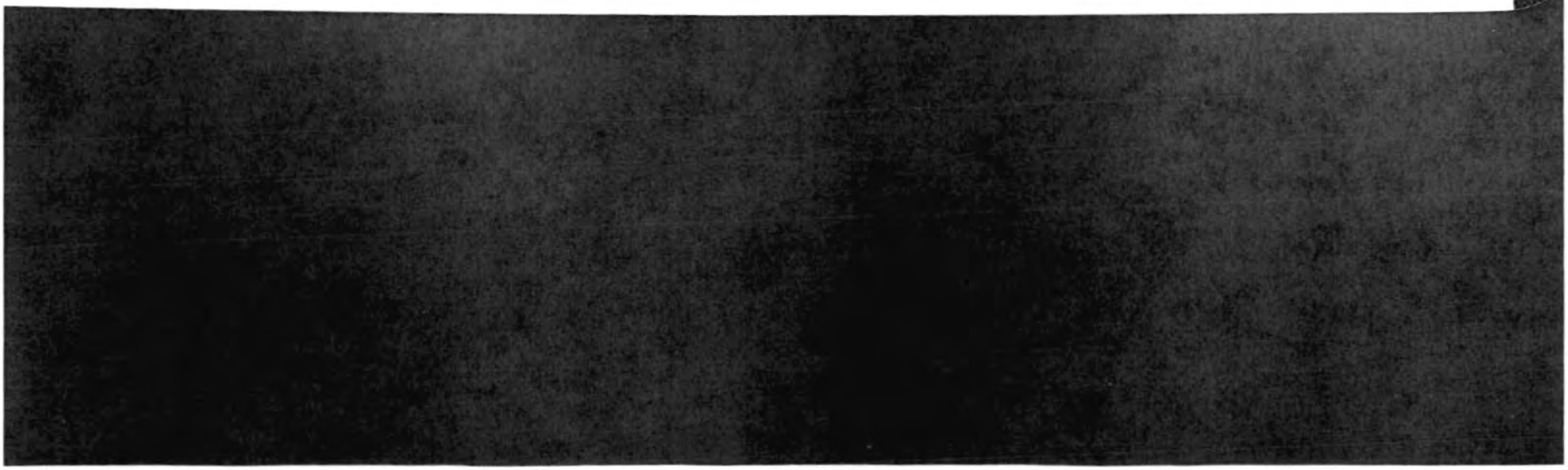
East Poplar Oil Field
Enforcement Case



East Poplar Oil Field
Enforcement Case
Safe Drinking Water Act §1431
Officer: Nathan Wiser



Region 8

13565

Ref 49

LOCATE WELL CORRECTLY

660' 1980'

Form No. 4
(Gen. Rule 206.3 & 231)

(SUBMIT IN TRIPLICATE)
TO
OIL AND GAS CONSERVATION COMMISSION
OF THE STATE OF MONTANA
BILLINGS OR SHELBY

JUL 1970
OIL & GAS CONSERVATION COMM.
STATE OF MONT.
BILLINGS

ENVIRONMENTAL
PROTECTION AGENCY
NOV 5 1998
MONTANA OFFICE

LOG OF WELL

Company Mesa Petroleum Co. Lease Biere Well No. 1-22

Address ~~Box 2009, Amarillo, Texas~~ Field (or Area) Poplar

C NW-SW
The well is located 1980 ft. from (S) (N) line and 660 ft. from (W) ~~(E)~~ line of Sec. 22

Sec. 22 ; T. 28N ; R. 51E ; County Roosevelt ; Elevation 2086 KB 2074 GL
(D.F., R.B. or G.L.)

Commenced drilling 5-6-70, 19__; Completed ~~XXXXX~~ 6-8-70, 19__

The information given herewith is a complete and correct record of the well. The summary on this page is for the condition of the well at the above date.

Completed as oil
(oil well, gas well, dry hole)

Signed

Title Production Superintendent

Date July 7, 1970

IMPORTANT ZONES OF POROSITY

(denote oil by O, gas by G, water by W; state formation if known)

From	698	to	876	Judith River	W
From	3200	to	3570	Dakota	W
From	4840	to	4992	Tyler	W
From	5155	to	5288	Kibbey Ss.	W
From	5516	to	5543	Charles "A"	W
From	5635	to	5678	Charles "B"	W
From	5798	to	5805	Charles "C"	O & W
From		to			

CASING RECORD

Size Casing	Weight Per Ft.	Grade	Thread	Casing Set	From	To	Sacks of Cement	Cut and Pulled from
8 5/8	24	J	8	741			465	none
5 1/2	15	J	8	5845			675	none

TUBING RECORD

Size Tubing	Weight Per Ft.	Grade	Thread	Amount	Perforations
2 7/8	6.7	J	8	5767	5791

COMPLETION RECORD

Rotary tools were used from 0 to 5845
Cable tools were used from to
Total depth 5845 ft.; Plugged back to 5803 T.D.; Open hole from to

PERFORATIONS			ACIDIZED, SHOT, SAND FRACED, CEMENTED			
Interval From	Interval To	Number and Size and Type	Interval From	Interval To	Amount of Material Used	Pressure
5791		Hydro-jet	5791		2000 gals 7 1/2% HCL	

(If P&A show plugs above)

INITIAL PRODUCTION

Well is producing from Charles "C" zone (pool) formation.

I. P. 516 barrels of oil per 24 hours flowing
(pumping or flowing)

150 Mcf of gas per 24 hours.

966 barrels of water per 24 hours, or 65 % W.C.

(OVER)

MURPHY E84 61

LOCATE WELL CORRECTLY

Form No. 4
(Gen. Rule 206.3 & 231)

(SUBMIT IN TRIPLICATE)
TO
OIL AND GAS CONSERVATION COMMISSION
OF THE STATE OF MONTANA
BILLINGS OR SHELBY

LOG OF WELL

Company MURPHY CORPORATION Lease BLM-A 029305 Well No. 61

Address 602 Midland Bank Bldg, Billings, Montana Field (or Area) East Poplar

The well is located 1980 ft. from (N) line and 2080 ft. from (E) line of Sec. 12

Sec. 12 ; T. 28N ; R. 51E ; County Roosevelt ; Elevation 2162' K.B. (D.F., R.B. or G.L.)

Commenced drilling July 23, 19 55; Temporarily Abandoned ? December 19, 19 55

The information given herewith is a complete and correct record of the well. The summary on this page is for the condition of the well at the above date.

Completed as dry hole (oil well, gas well, dry hole)

Signed Harold Milam
Harold Milam

Title Division Production Superintendent

Date January 5, 1956

IMPORTANT ZONES OF POROSITY

(denote oil by O, gas by G, water by W; state formation if known)

From ____ to ____ From ____ to ____
From ____ to ____ From ____ to ____
From ____ to ____ From ____ to ____
From ____ to ____ From ____ to ____

RECEIVED
JAN 7 1956
OIL AND GAS CONSERVATION COMM.
OF THE STATE OF MONTANA - BILLINGS

CASING RECORD

Size Casing	Weight Per Ft.	Grade	Thread	Casing Set	From	To	Sacks of Cement	Cut and Pulled from
10-3/4"	32.75 & 40.50	H-40 J-55	8	1057.52'			700	
5-1/2"	15.50#	J-55	8	5942.00'			300	

TUBING RECORD

Size Tubing	Weight Per Ft.	Grade	Thread	Amount	Perforations
2-3/8"	4.70#	EUE	8	5631.72'	open ended

COMPLETION RECORD

Rotary tools were used from 0 to 5943'
Cable tools were used from ____ to ____
Total depth 5943' ft.; Plugged back to 5900' T.D.; Open hole from ____ to ____

PERFORATIONS			ACIDIZED, SHOT, SAND FRACED, CEMENTED			
Interval From	Interval To	Number and Size and Type	Interval From	Interval To	Amount of Material Used	Pressure
5606'	5612'	1/2" Jet	5606'	5612'	700 gallons acid	2400#
5603'	5609'	1/2" Jet	5603'	5612'	500 gallons acid	2500#
5612'	5617'	1/2" Jet	5603'	5617'	300 gallons acid	2600#

(If P&A show plugs above)

INITIAL PRODUCTION

Well is producing from ____ (pool) formation.

I. P. Temporarily Aban barrels of oil per ____ hours (pumping or flowing)

OK.

____ Mcf of gas per ____ hours.
____ barrels of water per ____ hours, or ____ % W.C.

(OVER)

15M—5-55

INITIAL PRODUCTION—(Continued)

Initial 10-day average production _____ (bbl./day) (if taken)
Pressures (if measured): Tubing _____ psi flowing; _____ psi shut-in
. Casing _____ psi flowing; _____ psi shut-in
Gravity _____ ° API (corrected to 60° F.)

DRILL STEM TESTS

D.S.T. No.	From	To	Tool Open (Min.)	Shut-In	F.P.	S.I.P.	Recovery	Cushion
			See attached					

LOGS RUN

Type	Intervals	
	From	To
See attached		

FORMATION RECORD

From	To	SAMPLE AND CORE NO. AND DESCRIPTION	Top of Formation
		See attached	

C O M P L E T I O N D A T A

CASING: Ran 42 jts. 1047.77' of 10-3/4", 32.75# and 40.50#, H-40 and J-55, R-1 and R-2 Standard American casing. Landed 9.75' below RKB. Howco float shoe at 1057.52'. Two Howco centralizers at 830' and 1042'. Cemented with 700 sacks regular with 1 percent $CaCl_2$. Plug down at 11:45 A.M., 7-25-55. Lost circulation while cementing. Ran temperature survey, found top of cement at 220'. Ran 189' 1" down by the side of 10-3/4", cement top 10-3/4" with 100 sacks regular. Cement returned to surface. 10-3/4" surface pipe set as follows:

RKB to ground	9.75
40.50# J-55	94.16
32.75# H-40	601.51
40.50# J-55	352.10
Total	1057.52

Ran 187 jts. 5938.50' of 5-1/2", 15.50#, J-55, 8 rd. thd., R-2, American casing. Landed 8.50' below RKB and set at 5942'. Ran Howco automatic fillup shoe at 5942', Howco baffle collar at 5906'. Ran scratchers solid from 5940' to 5909', from 5909' to 5799', skipped 2' between scratchers, from 5796' to 5718' solid, from 5713' to 5648', skipped 2' between scratchers, and from 5650' to 5570' solid. Ran Howco centralizers at 5926', 5806', 5709', 5644' and 5558'. Cemented with 300 sacks Slo-set cement with 2 percent gel. Pipe froze while cementing. Plug down at 3:50 A.M., 8-13-55. Bumped plug with 1000#, released pressure, held ok. Tested casing with 1000#, 30 minutes, held ok.

COMPLETION: Ran 181 jts. 5595.50' 2-3/8", 4.70#, J-55, EUE, 8rd. thd., R-2, American tubing. Landed 7.00' below RKB at 5602.50'.

Perforated "A" Zone 5606'-5612', 5 jets per foot with Schlumberger 1-3/4" tubing gun. Opened to pit. Flowed natural stream the size of a pencil. Flowed to pit for 3 hours, circulated tubing out, no free water. Acidized "A" Zone 5606'-5612' with 700 gallons, 15 percent regular Dowell acid. Broke formation with 2400# with 100 gallons in formation. Stopped pumps and opened to pit, flowed 9 barrels displacement oil in 37 minutes, spend acid 79 more minutes. Flowed 22 barrels, 1 hour open flow, 98 percent salt water. TFP-25#, CP-800#. Flowed 8 hours to pit, 100 percent salt water. DOC squeezed with 50 sacks Slo-set cement. Broke formation with 2400#, maximum squeeze pressure-3000#. Held 30 sacks in formation, reversed out 20 sacks. Job complete at 8:00 A.M., 8-17-55. Swabbed to test squeeze job. Swabbed 67 barrels displacement oil, lowered fluid level to 3700', circulated with oil and found 1/2 barrel water in the tubing. Ran Lane Wells 1-3/4" Gamma Ray through tubing. Re-perforated 5603'-5609', 5 jets per foot with Lane Wells 1-3/4" tubing gun. Would not flow natural, swabbed 97 barrels displacement oil, no water, fluid level 4000'.

8-19-55: Re-acidized with 500 gallons Dowell 15 percent regular acid, injected 4 barrels in formation at 2500#, no break in formation. Final injection pressure 2500#, bleed down pressure 1400#. Flowed unspent acid for 23 minutes, new fluid for 14 more minutes. Flowed to pit for 30 minutes on open flow with 75 to 85 percent water. 1 hour test on 1/4" choke, flow rate 16 BFPH, 85% water, TFP--70#, CP--900#. 1 hour test on 12/64" choke, flow rate 9 BFPH, 89% water, TFP--100#, CP--950#. 1 hour test on 10/64" choke, flow rate 10 BFPH, 90% water, TFP--165#, CP--1000#. Rig released at 4:00 P.M., 8-19-55. Moved in pulling unit.

8-22-55: Continued testing--10/64" choke, flow rate 8 BFPH, 98% water, TFP--125#, CP--950#.

8-24-55: 1/4" choke, flow rate 16 BFPH, 89% water, TFP--80#, CP--850#. Displaced water in tubing with oil. Broke formation with oil at 1800#. DOC squeezed with 50 sacks Slo-set cement, 516 gallons Diesel oil, 30 sacks in formation, maximum pressure was 3200#, held ok. Reversed out 20 sacks. Pulled up 1 joint, shut in under 1500# pressure. Job complete at 3:00 P.M., 8-25-55. Waited on cement for 16 hours. Began swabbing to test shut off. Swabbed 8 hours, 101 barrels oil, fluid level 4500', no water, let set overnight.

8-28-55: Checked fluid level with swab, found level at 5000', Swabbed 4 barrels fluid, no water.

8-29-55: Swabbing. Let set over the weekend (48 hours), 1000' fillup, recovered 10 barrels fluid in 1 hour, one trip with swab 90% water, 2 trips with swab 10% water. Clean oil after two trips. Swabbed down.

8-30-55: Swabbed 7:00 A.M.-8:00 A.M., recovered 7 barrels clean oil, 8:00-9:00, recovered 3 barrels oil. Swabbed down. Reperforated "A" Zone with Schlumberger 5612'-5617' with 1-3/4" tubing gun, 5 jets per foot, let set overnight. Swabbed 6:00 A.M.-7:00 A.M., recovered 8 barrels fluid, 2% water, fluid level at 5500'. Acidized with 300 gallons Dowell 15 percent regular acid, maximum pressure 2600#. Injected 3 barrels acid in formation, no pressure break. Flowed and swabbed out acid. Swabbed 6 BFPH, 3% water. Flowed 3-1/2 hours on open flow, flow rate 3.58 BFPH, no water, TP--0#, CP--100#. Flowed 9 hours on 1/4" choke, flow rate 2.34 BFPH, no water, TFP--0#, CP--450#.

9-3-55: Tested 1/4" choke, 14 BFPD, 33% water, TFP--0#, CP--750#.

9-6-55: Displaced tubing with oil, 16 hour flow rate on 1/4" choke, 25 barrels displacement oil, TFP--255#, CP--600#.

9-13-55: Rigged up swabbing machine. Swabbed 81 barrels fluid in 6 hours, 31% water.

9-14-55: Swabbed 8 hours, swab rate 248 BFPD, 33% water.

9-20-55: Pulled tubing, spaced seating nipple at 3675'. Ran rods and 2" x 1½" x 16' D&B pump. Set portable pumping unit.

Pumped 12 hours, then tested 8 hours, first 6 hours rate 147 BFPD, 20% water, last 2 hours rate 81 BFPD, 25% water.
9-22-55: Pumped 103 BFPD, 30% water.
9-23-55: Pumped 98 BFPD, 26% water.
9-24-55: Pumped 24 BFPD, 80% water.
9-25-55: Pumped 88 BFPD, 80% water.
9-27-55: Pumped 17.08 BOPD, 68.36 BWPD.
9-28-55: Pumped 82 BFPD, 80% water, 16 BOPD, 66 BWPD.
10-4-55: Pumped 88 BFPD, 85% water, 13 BOPD, 75 BWPD.
11-30-55: Pumped 59 BFPD, 84% water, 9 BOPD, 50 BWPD.
12-2-55: Pumped 79 BFPD, 75% water, 20 BOPD, 59 BWPD.
12-3-55: Pumped 72 BFPD, 14 BOPD, 58 BWPD.
12-4-55: Pumped 73 BFPD, 12 BOPD, 61 BWPD.
12-5-55: Pumped 72 BFPD, 12 BOPD, 60 BWPD.
12-6-55: Pumped 71 BFPD, 18 BOPD, 53 BWPD.
12-7-55: Pumped 72 BFPD, 15 BOPD, 58 BWPD.
12-8-55: Pumped 71 BFPD, 10 BOPD, 61 BWPD.
12-9-55: Pumped 69 BFPD, 14 BOPD, 55 BWPD.
12-10-55: Pumped 73 BFPD, 11 BOPD, 62 BWPD.
12-11-55: Pumped 69 BFPD, 14 BOPD, 56 BWPD.
12-12-55: Pumped 69 BFPD, 8 BOPD, 61 BWPD.
12-13-55: Pumped 67 BFPD, 7 BOPD, 60 BWPD.

Moved in pulling unit to reacidize. Acidized "A" Zone 5603'-5617' with 500 gallons Dowell etching acid. Maximum pressure 2500#, broke formation back to 2200#, injection rate 1/2 BPM. Bled back to 1800#, opened to pit, spent acid to surface in 31 minutes and then died. Swabbed 6 hours at rate of 35 BPH, 100% salt water.

Temporarily abandoned December 19, 1955.

EAST POPLAR UNIT WELL NO. 61

TO PLUG AND ABANDON

E.P.U. No. 61 was completed as a dry hole and temporarily abandoned on December 19, 1955. The following intervals have been tested and found to be incapable of oil or gas production in commercial quantities:

Perforations		Drill Stem Tests	
"A"	5606'-5612'	"A"	5604'-5615'
"A"	5603'-5609'	"B"	5738'-5754'
"A"	5612'-5617'	"B"	5751'-5765'
		"C"	5909'-5925'

Height of cement in hole between 5-1/2" casing and 8-3/4" hole -- 1,303'. Top of cement at 4631'. Will kill salt water flow with 10.4# per gallon mud. Bottom of 2-3/8" E.U.E. tubing at 5632'. Will set 50 sacks cement plug in 5-1/2" casing from bottom of tubing at 5632' to 5220' (412' plug). Lay down tubing. Top of plug in 5-1/2" casing 5220'. Will attempt to cut off and pull as much of the available 4631' of 5-1/2" casing as possible, setting a 25 sack plug at the bottom of the 10-3/4" surface casing 1058' to 1009' (49' plug) and a 10 sack plug at the top of 10-3/4" casing (19' plug) with a 3" steel post marker cemented in and capped in accordance with the Montana State Oil & Gas Commission and United States Geological Survey Regulations.

Form No. 2

GENERAL RULES
201, 202, 213,
216, 219, 233.1

(SUBMIT IN QUADRUPLICATE)

TO

OIL AND GAS CONSERVATION COMMISSION
OF THE STATE OF MONTANA
BILLINGS OR SHELBY

NOTICE!
THIS FORM BECOMES A PERMIT WHEN STAMPED APPROVED BY AN AGENT OF THE COMMISSION.

RECEIVED
JUL 29 1955
OIL AND GAS CONSERVATION COMMISSION
OF THE STATE OF MONTANA
BILLINGS

802

SUNDRY NOTICES AND REPORT OF WELLS

Notice of Intention to Drill		Subsequent Report of Water Shut-off	
Notice of Intention to Change Plans		Subsequent Report of Shooting, Acidizing, Cementing	
Notice of Intention to Test Water Shut-off		Subsequent Report of Altering Casing	
Notice of Intention to Redrill or Repair Well		Subsequent Report of Redrilling or Repair	
Notice of Intention to Shoot, Acidize, or Cement		Subsequent Report of Abandonment	
Notice of Intention to Pull or Alter Casing		Supplementary Well History	X
Notice of Intention to Abandon Well		Report of Fracturing	

(Indicate Above by Check Mark Nature of Report, Notice, or Other Data)

July 27, 19 55

Following is a {notice of intention to do work / report of work done} on land {owned / leased} described as follows:

LEASE BLM-A-029305

MONTANA (State) Roosevelt (County) East Poplar (Field)

Well No. 61 12 (m. sec.) 28N (Township) 51E (Range) M.P.M. (Meridian)

The well is located 1980 ft. from {N / S} line and 2080 ft. from {E / W} line of Sec. 12

(Locate accurately on Plat on back of this form the well location, and show lease boundary.)

The elevation of the derrick floor above the sea level is 2151' Gr.

READ CAREFULLY — DETAILS OF PLAN OF WORK — READ CAREFULLY

(State names of and expected depths to objective sands; show size, weights, and lengths of proposed casings; indicate mudding jobs, cementing points, and all other important proposed work, particularly all details results Shooting, Acidizing, Fracturing.)

DETAILS OF WORK
RESULT

Spudded July 23, 1955. Ran 142 jts. 1047.77', 10 3/4", 32.75 and 40.50#, H-40, and J-55, R-1 and R-2 standard American casing. Landed 9.75' below RKB. Howco float shoe at 1057.52'. 2 Howco centralizers at 830' and 1042'. Cemented with 700 sacks regular with 1 percent $CaCl_2$. Plug down 11:45 A.M., 7-25-55. Lost circulation while cementing. Ran temperature survey, found top cement at 220'. Ran 189' 1" down by the side of the 10 3/4", cement top 10 3/4 with 100 sacks regular. Cement returned to surface.

APPROVED USGS 8-1-55

Approved subject to conditions on reverse of form

Date 8-2-55

By Mark P. Hinkley Asst. Dist. Engr.
Title
District Office Agent

Company Murphy Corporation

By Harold Milam
Harold Milam

Title Division Production Superintendent

Address Midland Nat'l. Bank Bldg.

NOTE:—Reports on this Form to be submitted to the District Agent for Approval in Quadruplicate.

OVER

Form No. 2
GENERAL RULES
201, 202, 213,
216, 210, 233.1

(SUBMIT IN QUADRUPLICATE)
TO
OIL AND GAS CONSERVATION COMMISSION
OF THE STATE OF MONTANA
BILLINGS OR SHELBY

NOTICE!
THIS FORM BECOMES A PERMIT WHEN STAMPED APPROVED BY AN AGENT OF THE COMMISSION.

RECEIVED
DEC 4 1961
OIL AND GAS CONSERVATION COMMISSION OF THE STATE OF MONTANA

SUNDRY NOTICES AND REPORT OF WELLS

Notice of Intention to Drill		Subsequent Report of Water Shut-off	
Notice of Intention to Change Plans		Subsequent Report of Shooting, Acidizing, Cementing	
Notice of Intention to Test Water Shut-off		Subsequent Report of Altering Casing	
Notice of Intention to Redrill or Repair Well		Subsequent Report of Redrilling or Repair	
Notice of Intention to Shoot, Acidize, or Cement		Subsequent Report of Abandonment	XXX
Notice of Intention to Pull or Alter Casing		Supplementary Well History	
Notice of Intention to Abandon Well		Report of Fracturing	

(Indicate Above by Check Mark Nature of Report, Notice, or Other Data)

October 17, 1961

Following is a {report of work done} on land {leased} described as follows:

LEASE BLM-A-029305A

MONTANA (State) Roosevelt (County) East Poplar (Field)

Well No. 61 SW NE Section 12 (m. sec.) 28N (Township) 51E (Range) M.P.M. (Meridian)

The well is located 1980 ft. from {N} line and 2080 ft. from {E} line of Sec. 12

(Locate accurately on Plat on back of this form the well location, and show lease boundary.)

The elevation of the derrick floor above the sea level is 2162 K.B.

READ CAREFULLY — DETAILS OF PLAN OF WORK — READ CAREFULLY

(State names of and expected depths to objective sands; show size, weights, and lengths of proposed casings; indicate mudding jobs, cementing points, and all other important proposed work, particularly all details results Shooting, Acidizing, Fracturing.)

DETAILS OF WORK
RESULT

See Attached Sheet

RECEIVED
OCT 18 1961
OIL AND GAS CONSERVATION COMMISSION
OF THE STATE OF MONTANA - BILLINGS

Approved subject to conditions on reverse of form Legal Approval 11-30-61

Date 12-1-61

By [signature] Supv
Title
District Office Agent

Company MURPHY CORPORATION

By [signature]

Title Field Production Superintendent

Address Box 547 Poplar, Montana

NOTE:—Reports on this Form to be submitted to the District Agent for Approval in Quadruplicate.

10M--

OVER

Locate well by footage measurement from legal subdivision line, lease or property line and nearest drilling or producible well, if any.

Form No. 2
File at
Billings
or Shelby

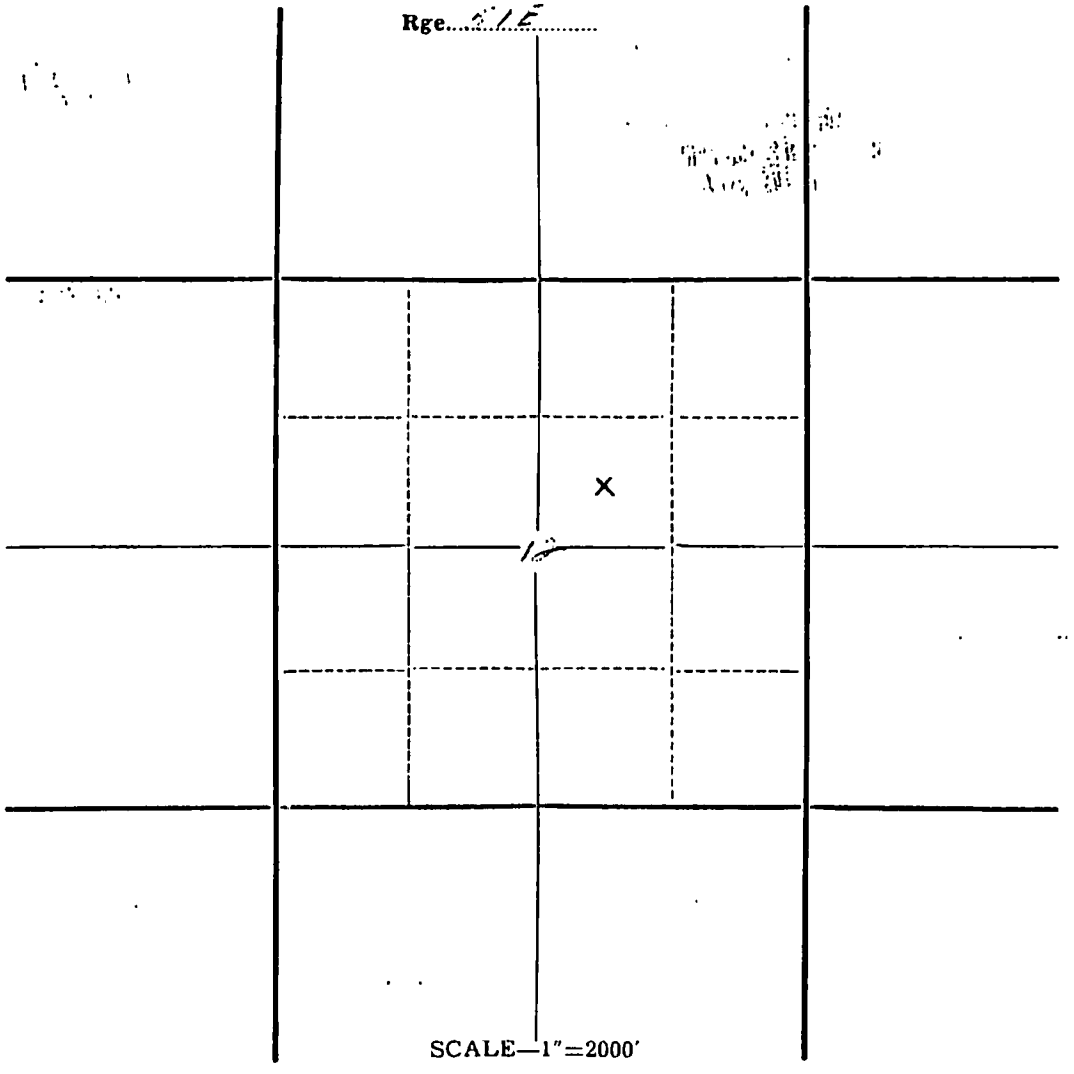
Rge. 21E

Form No. 2
File at
Billings
or Shelby

Locate
Well
Correctly

Locate
Lease
Boundary

Twp. 22N



SCALE—1"=2000'

THE NOTICE OF INTENTION TO DRILL THIS WELL IS APPROVED SUBJECT TO THE FOLLOWING CONDITIONS:

1. Any person, before commencing the drilling of any oil or gas well, shall secure from the commission a drilling permit and shall pay to the commission therefor for the following amounts: for each well whose estimated depth is thirty-five hundred (3500) feet or less, twenty-five dollars ($25.00); from thirty-five hundred and one (3501) feet to seven thousand (7000) feet, seventy-five dollars ($75.00); seven thousand (7000) feet and deeper, one hundred fifty dollars ($150.00).
2. No well is to be spudded in unless the proper surety drilling bond has been posted and approved by the Oil and Gas Conservation Commission of the State of Montana.
3. Cable tool operators must construct an adequate sump to contain all mud and water bailed from the hole.
4. Surface or conductor casing must be properly cemented by an approved method to act as a tie in case an unexpected flow of oil, gas, or water should be encountered, unless special permission has been granted for formation shut-off.
5. Any contemplated change in status of a well such as to plug and abandon, deepen, plug back, redrill, alter casing, etc., must be presented on Sundry Notices and Report of Wells form for approval by agent prior to commencement of work.
6. All substantial showings of oil or gas must be tested for commercial possibilities before drilling ahead. Each such showing must be adequately protected by casing, mud or cement, as drilling progresses.
7. The production string must be cemented unless a formation shut-off or packer is approved by the agent. Sufficient cement must be used to protect the casing and possible productive formation exposed in the process of drilling not otherwise protected.
8. All production strings of casing must be tested by bailing or pressure to determine if there is a tight bond with the formation or possible leaks in the casing. The results of the test must be reported on Sundry Notices and Report of Wells form, said report to include the size, weight, thread and length of casing, amount of cement used, and date work is done. If test shows failure, the defect must be corrected before any drilling operations are resumed.
9. A satisfactory drilling record must be kept for each tour, showing top and thickness of each and all formations drilled and all other information of value, one copy of which is to be kept at the rig while drilling is in progress for examination when an agent visits the well.
10. All producing wells must be marked with name of the operator, number of the well, and location, using reasonable precautions to preserve these markings at all times.
11. Copies of all directional surveys, electrical logs, or tops from electrical log if electric survey is run, formation tests, and cementing record, as furnished by the cementing company, etc., must be filed with the State Inspector of the district together with four copies of the log, upon completion of the well.
12. All work must be done in conformity with the regulations of the Oil & Gas Conservation Commission of the State of Montana, as contained in "General Rules and Regulations," and amendments thereto, as well as regulations prescribed in lieu thereof.

RECEIVED

DEC 4 1961

OIL AND GAS CONSERVATION COMMISSION
OF THE STATE OF MONTANA

RECORD OF PLUGGING AND ABANDONMENT

Date April 25, 1960

Lease and Well No. East Poplar Unit Well No. 61

Field East Poplar County Roosevelt State Montana

Well Location SW NE Section 12, T28N, R51E

Status Prior to Abandonment:

Date Completed: December 19, 1955 Date of Last Workover None

T.D. 5943' Perforations A Zone 5603-5617 Prod. Zone None

Cumulative Production None

Justification for Abandonment:

This well was completed as a dry hole and temporarily abandoned on December 19, 1955. Will attempt to cut and recover as much of the available 5½" casing as possible.

Summary of Abandonment:

Set cement plug in 5½" casing with 25 sacks of regular cement with HR-4 retarder added. Plug from 5632 to 5380. Cut and pulled 4168' of Cond. 2 5½", 15.50# casing and 130' of Cond. 4 (junk) 5½", 15.50# casing. Plugged bottom of 10-3/4" surface casing with 25 sack plug. Set 10 sack cement plug at top of surface casing and cemented 3" pipe marker in ground, rising 6' above ground level in accordance with the regulations of the Montana Oil & Gas Conservation Commission.

ELECTRO LOG DATA

TYPE OF LOG	INTERVAL LOGGED
Schlumberger Electrical Survey 2"	1056'-5942'
Schlumberger Electrical Survey 5"	2000'-5942'
Schlumberger Microlog 5"	2000'-5939'
Schlumberger Microlog 25"	5400'-5939'
Schlumberger Temperature Log	0'-1038'
Lane Wells Radioactivity Log	4450'-5665'

LOG TOPS

Eagle	1419	(+ 743)	(?)
Niobrara	2069	(+ 93)	
Greenhorn	2416	(- 256)	
Graneros	2623	(- 461)	
Muddy	2980	(- 818)	
Dakota	3187	(-1025)	
Morrison	3491	(-1329)	(?)
Swift	3640	(-1478)	(?)
Rierdon	4150	(-1988)	
Piper Shale	4319	(-2157)	
Piper Limestone	4399	(-2237)	
Gypsum Springs	4453	(-2291)	
Spearfish	4667	(-2505)	
Amsden	4757	(-2595)	(?)
Heath	4912	(-2750)	
Otter	5104	(-2942)	
Kibbey Sandstone	5241	(-3079)	
Kibbey Limestone	5400	(-3238)	
Madison	5552	(-3390)	
"A" Zone	5607	(-3445)	
Salt	5688	(-3526)	12' thick
"B-1" Zone	5744	(-3582)	
"B-2" Zone	5762	(-3600)	
"C" Intercrystalline	5912	(-3750)	

DRILL STEM TESTS

D.S.T. #1: 5604'-5615' ("A" Zone) with Halliburton single packer, 1/2" bottom choke, no water cushion. Tool open 4 hours, closed 30 minutes. Tool opened with strong blow, continued throughout test. Recovered 1000' gas, 2990' clean oil, 55' oil-and-gas-cut mud, 50' salty sulphur water. IBHFP--95#, FBHFP--1028#, BHSIP--2810#, Hydro--3128#.

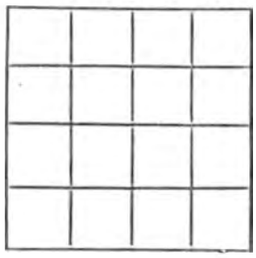
D.S.T. #2: 5738'-5754' ("B-1" Zone) with Halliburton straddle packers, 1/2" bottom choke, no water cushion. Tool open 4 hours, closed 30 minutes. Tool opened with weak blow, died in 75 minutes. Recovered 30' oil-cut mud, 335' salt water. IBHFP--10#, FBHFP--185#, BHSIP--2140#, Hydro--2950#. Bottom recorder broke, fluid recovered, indicated bottom packer held.

D.S.T. #3: 5751'-5765' ("B-2" Zone) with Halliburton single packer, 1/2" bottom choke, no water cushion. Tool open 4 hours, closed 30 minutes. Tool opened with good blow, continued throughout test. Recovered 85' oil-cut mud, 3100' salt water. IBHFP--10#, FBHFP--1495#, BHSIP--2730#, Hydro--3240#.

D.S.T. #4: 5909'-5925' ("C" Zone) with Halliburton packer, 1/2" bottom choke, no water cushion. Tool open 4 hours, closed 30 minutes. Tool opened with medium blow, continued throughout test. Recovered 800' gas, 10' clean oil, 285' salt water with bad odor. IBHFP--10#, FBHFP--65#, BHSIP--2600#, Hydro--3300#.

MURPHY EPU 63

LOCATE WELL CORRECTLY



Form No. 4
(Gen. Rule 206.3 & 231)

814

(SUBMIT IN TRIPLICATE)
TO
OIL AND GAS CONSERVATION COMMISSION
OF THE STATE OF MONTANA
BILLINGS OR SHELBY

LOG OF WELL

Company Murphy Corporation Lease E.P.U. (BIM-A 029305A) Well No. 63

Address 602 Midland Bank Bldg, Billings, Montana Field (or Area) East Poplar

The well is located 1980 ft. from ~~(S)~~ (N) line and 1980 ft. from ~~(W)~~ (E) line of Sec. 27

Sec. 27 ; T. 28N ; R. 51E ; County Roosevelt ; Elevation 2162' K.B.
(D.F., R.B. or G.L.)

Commenced drilling September 11, 19 56; Completed February 8, 1956

The information given herewith is a complete and correct record of the well. The summary on this page is for the condition of the well at the above date.

Completed as oil well
(oil well, gas well, dry hole)

Signed Harold Milam

Title Division Production Superintendent

Date February 22, 1956

IMPORTANT ZONES OF POROSITY

(denote oil by O, gas by G, water by W; state formation if known)

From 5231' to 5243' O Kibbey Sandstone
From ____ to ____
From ____ to ____
From ____ to ____
From ____ to ____
From ____ to ____
From ____ to ____
From ____ to ____

RECEIVED
FEB 24 1956
OIL AND GAS CONSERVATION COMMISSION
OF THE STATE OF MONTANA - BILLINGS

CASING RECORD

Size Casing	Weight Per Ft.	Grade	Thread	Casing Set	From	To	Sacks of Cement	Cut and Pulled from
10-3/4"	40.50#	H-40 & J-55	8	1062.01'			750	
5-1/2"	15.50#	J-55	8	5945.00'			350	

TUBING RECORD

Size Tubing	Weight Per Ft.	Grade	Thread	Amount	Perforations
2-3/8"	4.70#	EUE	8	5233.15'	open ended

COMPLETION RECORD

Rotary tools were used from 0 to 8521'
Cable tools were used from -- to --
Total depth 8521' ft.; Plugged back to 5913' T.D.; Open hole from -- to --

PERFORATIONS			ACIDIZED, SHOT, SAND FRACED, CEMENTED			
Interval From	Interval To	Number and Size and Type	Interval From	Interval To	Amount of Material Used	Pressure
5231'	5243'	1/2" Jet	5231'	5243'	294 gallons mud acid	2450#
See attached sheets for other perforations that have been plugged off.						

(If P&A show plugs above)

INITIAL PRODUCTION

Well is producing from Kibbey (pool) formation.

I. P. 54 barrels of oil per 24 hours flowing
(pumping or flowing)

neg. Mcf of gas per -- hours.

-0- barrels of water per 24 hours, or -- % W.C.

(OVER)

15M—5-55

INITIAL PRODUCTION—(Continued)

Initial 10-day average production _____ (bbl./day) (if taken)

Pressures (if measured): Tubing _____ psi flowing; _____ psi shut-in

Casing _____ psi flowing; _____ psi shut-in

Gravity 36.8 ° API (corrected to 60° F.)

DRILL STEM TESTS

D.S.T. No.	From	To	Tool Open (Min.)	Shut-In	F.P.	S.I.P.	Recovery	Cushion
			See attached					

LOGS RUN

Type	Intervals	
	From	To
See attached		

FORMATION RECORD

From	To	SAMPLE AND CORE NO. AND DESCRIPTION	Top of Formation
		See attached	

WELL HISTORY

WELL NO.:	East Poplar Unit No. 63
LOCATION:	SW NE Section 27, Township 28 North, Range 51 East
ELEVATION:	2150' Ground - 2162' K.B.
CONTRACTOR:	Zach Brooks Drilling Company
SPUDDED:	7:30 P.M., September 11, 1955
COMPLETED:	February 8, 1956
TOTAL DEPTH:	8521' Schlumberger equals 8514' Driller
CASING:	10-3/4" @ 1062.01' with 700 sacks of cement 5-1/2" @ 5945.00' with 350 sacks of cement
TUBING:	2-3/8" @ 5233.15'
PERFORATIONS:	5231'-5243'
PACKER:	None
ACID TREATMENT:	294 gallons mud acid
INITIAL POTENTIAL:	24 hour test on 1/2" choke, flow rate 54.00 BFPD, 1/10 of 1 percent basic sediment, TFP--0#
TYPE COMPLETION:	Single completion from the Kibbey Sandstone

COMPLETION DATA

CASING: Ran 34 jts. 1049.01' of 10-3/4", 40.50#, H-40 and J-55, 8rd. thd., R-2, American casing. Landed 13.00' below RKB, 10' off bottom. Cemented with 700 sacks of Ideal regular cement with 2 percent $CaCl_2$. Clean cement to surface. Plug down at 1:30 P.M., 9-13-55. Released pressure, float held ok. Bumped plug with 1000#.

Ran 186 jts. 5932.35' of 5-1/2", 15.50#, J-55, 8rd. thd., R-2, American Class A casing. Landed 12.75' below RKB at 5945'. Ran Howco differential fillup shoe on bottom and Howco baffle collar at 5916'. Ran 1056' of Weatherford scratchers from 4889' to 5945'. Ran 12 Weatherford centralizers at 5937', 5874', 5772', 5708', 5578', 5450', 5634', 5299', 5246', 5215', 5074', and 4968'. Cemented with 350 sacks of Slo-set cement with 2 percent gel. Reciprocated pipe 35'-40' while circulating 1 hour and 9 minutes and while cementing 56 minutes. Bumped plug with 2700 PSI, relief valve sheared but line plugged. Released pressure, float held. Plug down at 8:40 P.M., 12-8-55. Set slips.

COMPLETION: 8521' T.D., plugged back to 5946' prior to setting 5-1/2" casing as follows:

Plug #1 8310'-8182' with 75 sacks,
Plug #2 7394'-7266' with 90 sacks,
Plug #3 6380'-6302' with 25 sacks,
Plug #4 6060'-5903' with 60 sacks.

Tagged bottom, found bottom with open end drill pipe at 5939', conditioned mud, made trip for bit, circulated out to PBTD at 5946'. Ran and cemented casing as noted above. Ran temperature survey and found cement top at 4700'. Ran Gamma Ray Neutron log from 4800' to 5913'. Picked up tubing, circulated out mud with water. Tested tree to 2000 PSI. Reversed out water with oil.

Tubing record--

2-3/8" EUE, 8rd. thd., American Class A tubing, 200 jts. 5896'	
Landed below KB	11.60
Top joint	31.51
1 sub spaced 2 jts. down	10.11
197	5827.11
Seating nipple at 4007'	.75
	5881.08

Perforated "C" Zone 5875'-5885' using Lane Wells swing jet with 4 jets per foot, 40 shots. Acidized "C" Zone with 500 gallons Dowell etching acid. Broke formation with 1600 PSI with 21 gallons of acid in formation. Broke back to 1050 PSI. Pumped 21 gallons at 1050 PSI at rate of 1/2 BPM, let stand 1 minute, bled back to 600 PSI. Resumed injection at 1/2 BPM at 1050 PSI. Injected 42 more gallons. Total acid in formation 84 gallons. Opened to pit, flowed small stream of load oil. Acid to surface in 2 hours 15 minutes. Spent acid 45 minutes later.

Clean oil 20 minutes later. Flowed small stream and headed clean oil for 1 hour and 20 minutes. Reversed circulated with oil to clean tubing, circulated out oil, water, and small amount of acid. Put well to test tank. Flowed 25 barrels, load oil 7 hours. TFP--0#, CP at end of 7 hours 800#. Flowed 7 barrels fluid 3 hours, 75% water, TFP--0#, CP--800#. Swabbed 9 hours, recovered 115 barrels total fluid, last 2 hours swab rate 6 BFPH, 50% water, fluid level 3800'. Swabbed 8½ hours, recovered 123 barrels total fluid, last 2 hour swab rate 10 BFPH, 50% water. Pulled tubing, spaced seating nipple at 4007', pin collar at 4070'.

Released rig at 11:00 P.M., 12-14-55. Set portable pumping unit to continue testing.

Tested as follows:

12-24-55: 10 hour test, pumped at the rate of 117 BFPD, 98% BS&W.
12-25-55: Did not make enough oil to flow out of gun barrel, salt water drained off water leg. Drained gun barrel.
12-27-55: 18 hour test, pumped at the rate of 114 BFPD, 80% BS&W.
12-28-55: 4 hour test, pumped at the rate of 104.60 BFPD, 82% BS&W.
12-29-55: 8 hour test, pumped at the rate of 39.2 BFPD, 85% BS&W.
12-30-55: 24 hour test, pumped at the rate of 28.46 BFPD, 85% BS&W.
1-1-56: 12 hour test, pumped at the rate of 160.50 BFPD, 99% BS&W.
1-2-56: 4½ hour test, pumped at the rate of 143 BFPD, 96% BS&W.
1-3-56: Ran sonic well sounder, found fluid level 130 jts. down at 4030', barrel spaced at 4007'.
1-4-56: Pumped 160 BFPD, 95% BS&W.
1-5-56: 4 hour test, pumped at the rate of 111 BFPD, 95% BS&W.
21 hour test, pumped at the rate of 88 BFPD, 96% BS&W.
1-7-56: 15 hour test, pumped at the rate of 46 BFPD, 97% BS&W.
1-8-56: Pumped 123 BFPD, 96% BS&W.
1-9-56: 17 hour test, pumped at the rate of 111 BFPD, 96% BS&W.
1-10-56: 16 hour test, pumped at the rate of 68 BFPD, 95% BS&W.
1-11-56: 24 hour test, pumped at the rate of 85 BFPD, 97% BS&W.
1-12-56: Pumped 100 BFPD, 96% BS&W.
1-13-56: 24 hour test, pumped at the rate of 96 BFPD, 95% BS&W.

Moved in pulling unit to reacidize "C" Zone. Ran tubing and set Howco Model "C" production packer at 5861' with tail pipe to 5870'. Tested packer to 1500 PSI, held ok.

Acidized "C" Zone through perforation 5875'-5885' with 1000 gallons of Dowell etching acid. Injected acid at 4 barrels per minute with 2800 PSI, no formation break, bled back to 1100 PSI. Opened to pit, flowed spent acid to surface in 78 minutes with 1 to 2 percent oil in 132 minutes.

Repaired pulling unit and waited for sinker bars to swab. Flowed well to tank for 1 hour at the rate of 12 BFPH, 98% water. Flowed to pit at approximately the same rate and same water cut.

Swabbed "C" Zone at the rate of 1.9 BFPH, 95-98 percent water. Squeezed "C" Zone perforation 5875'-5885' (through Halliburton Model "C" production packer, set at 5859') with 100 sacks of Slo-set cement. Staged last 18 sacks, 6 stages 5 to 10 minutes, to pressure up, maximum pressure 1600#, held. Picked up tubing 40' and reversed out, left 7 sacks cement on top of packer, no cement flag to surface. Job complete at 5:30 P.M., 1-18-56. Let set 14 hours and pressure tested to 2500# for 30 minutes, held ok.

Perforated "A-1" Zone 5570'-5575' with 22 bullets using Lane Wells type "E" 4" casing gun. Picked up Halliburton Model "C" production packer with junk pusher on bottom. Ran in 67 doubles, 1 single, and packer set at approximately 4187', came out of hole. Moved in pump and motor. Ran tubing with 4-3/4" bit. Rigged up and drilled Halliburton production packer at 4187', packer dropped to bottom of hole after drilling to bottom of slips on packer, left bottom of packer at PBTD 5821', ran sinker bars in tubing to check length of swab line, too short to run junk basket. Spooled on new sand line. Pulled tubing and ran Baker junk basket until hole was clean. Picked up Halliburton Model "C" production packer and set top of packer at 5553'. Swabbed "A-1" Zone, tubing swabbed dry with no show of oil, tested blow out preventers and packer at 1500#, held ok.

Acidized "A-1" Zone through perforations 5570'-5575' with 1000 gallons of Dowell etching acid, formation broke at 2600# and back to 2200#, increased injection rate to 1.5 barrels per minute at a maximum pressure of 2750#, pressure bled down to 2400#, opened well to pit, flowed small stream of load water for 10 minutes. Started swabbing and swabbed spent acid and salt water, started showing oil after fluid level lowered to 3800', swabbed down to 5500'. Made trip with swab every hour, recovered 1½ to 2 BFPH, 60% salt water. Fluid level built up overnight from 5500' to 3400', SITP--100#. Swabbed tubing dry in 20 minutes, obtained 15.3 barrels of water, 2.7 barrels of oil. Swabbed well down every hour, maximum fluid rise per hour 300'. Swabbed 9 hours, total fluid equalled 26.4 barrels, 65-100% water. Tested casing, blow out preventers and packer to 1500 PSI, held ok. Reversed out tubing, set back in to packer. Pressured up on tubing with 1500# back pressure on casing, pressure equalized. Tested manifold. Seal rings apparently leaking. Came out of hole with tubing and replaced madrel and seal rings. Went back in hole with tubing. Tested packer with 1500# on casing, held ok. Broke formation down with 2100#, broke back to 1900#.

Squeezed "A-1" Zone through perforation 5570'-5575' with 50 sacks of Slo-set cement. Began staging with 30 sacks in formation. Made four 1 to 15 minute stages with 2½ sacks per stage. Maximum pressure 2300#, bled back to 1900#. Did not hold squeeze. Pulled out of packer, released pressure, flapper valve held ok. Had 30 sacks in formation, dropped 5 sacks above packer, and reversed out 5 sacks, came out of hole, put on blind rams. Tested squeeze job to 2500# for 30 minutes, held ok.

Perforated Kibbey Limestone 5354'-5360' with Lane Wells type "E" bullet gun, 6 holes per foot. Ran Baker junk basket to clean hole. Ran Halliburton Model "C" production packer and set at 5345'. Swabbed tubing dry in 2 hours, continued swabbing once each hour. Made three runs, obtained fluid level build up of 300' of first run, no fillup thereafter. No show of oil or gas.

Acidized Kibbey Limestone through perforation 5354'-5360' with 500 gallons of Dowell etching acid. Pressured up to 3000#, broke back to 1700#. Injected acid at 1-3/4 barrels per minute at 1600#, bled down to 1300#. Opened to pit, well flowed small stream for 10 minutes and died. No pressure on tubing. Swabbed tubing dry with 4 trips with swab. Recovered spent acid on 3rd run, well opened 1 hour. Swabbed once each hour, 4 runs. Recovered no fluid build up, no show of oil or gas. Tested packer with 1500# on casing, held ok. Broke formation down at 1800#, back to 1400#. Cemented with 50 sacks of Slo-set cement. Began staging with 30 sacks in formation. Attempted nine 2 to 3 minute stages with 1 sack per stage. Maximum pressure 2600#, bled back to 1800#, did not squeeze. Pulled out of packer, flapper valve held ok. Put 45 sacks in formation, left 2 sacks above packer and reversed out 3 sacks. Tested cement to 2500#, held ok.

Perforated Kibbey Sandstone 5231'-5243' with 4 jets per foot using Lane Wells tubing swing jet gun. Checked top of cement at 5310' Lane Wells. Swabbed tubing dry, ran swab every hour, 3 hours, no fluid recovery. Let set 12 hours. Recovered 25' fluid, no show of oil or gas. Checked chlorides and weight of water. Recovered with swab 87,500 PPM, weight 8.9# per gallon, which compares with load water 9.1# per gallon. Swabbed dry. Loaded hole with salt water. Ran Lane Wells collar locater, picked up old perforations 5231'-5243'.

Reperforated Kibbey Sandstone 5231'-5243' with Lane Wells type "E" gun with 6 bullets per foot. Ran tubing. Swabbed down to 1500', no show of oil or gas, fluid level lowered each trip with swab. Swabbed dry, obtained show of Kibbey oil. Filled hole with salt water.

Acidized Kibbey Sandstone to break mud block with 500 gallons of Dowell mud acid through perforation 5231'-5243', pressured up to 2450#, let set 2 minutes, bled back to 2100#, let set 7 minutes, bled down to 1850#, resumed pumping at 2600#, broke back to 1200#, injected 294 gallons in formation, bled down to 1100#, opened to pit, flowed 1" stream for 5 minutes and died. Swabbed load water, spent acid, and show of oil for 4½ hours and oil percent increased to 5 when fluid level was at 2900', Swabbed to tank for 2½ hours at the rate of 15 BFPH, 10 to 70 percent oil. Shut down for 8 hours, fluid level built up from 4100' to 2100', no pressure on well. Made water draw. 9½ hour test made 55 barrels of fluid, 60 percent water

Began swabbing 100% oil at 9:40 A.M., 2-3-56, and continued throughout the day. Swabbed down from 2100' to 4900' in 13 hours, last 2 hours

swab rate was 6 BFPH, 98% oil. Shakeout from bottom of run fluid contained 98% oil, 1.6% basic sediment, and .4% free water, API gravity at 60 degrees F equals 36.8. Fluid level built up from 4900' to 2000' in 11 hours. Swabbed well down from 4900' to 2000'. Total fluid made in 24 hours equalled 120.21 barrels, 99% oil. Last 1 hour swabbing rate was 7 BFPH, 1% basic sediment. Shakeout from bottom of last run fluid contained 99% oil, 1% basic sediment, and no free water, basic sediment appears to be mud. Put well on 1/4" choke to see if fluid level would build up and flow. Filled tubing and casing in 24 hours. Flowed 29 barrels of clean oil, 13 hours, 1/4" choke, no pressure.

Tubing record--

Top joint	31.49
2 subs	18.16
Below RKB	11.60
166 jts.	5171.90
Total	5233.15

Flowed as follows:

2-7-56: 7 hour test, flowed on 1/4" choke at rate of 66.00 BOPD, .2% basic sediment.
17 hour test, flowed on 1/4" choke at rate of 51.12 BOPD, .2% basic sediment.

2-8-56: 24 hour test, flowed on 1/2" choke at rate of 54.00 BFPD, 1/10 of 1% basic sediment, TFP--0# (initial potential).

2-9-56: 3 hour test, flowed on 12/64" choke at rate of 55.00 BFPD, .4% basic sediment, TFP--50#.

2-10-56: 4 hour test, flowed on 16/64" choke at rate of 55.00 BFPD, .2% BS&W, TFP--40#.

2-11-56: 1-3/4 hour test, flowed on 1/4" choke at rate of 50.88 BFPD, .2% basic sediment, TFP--40#.

Ran bottom hole pressure. Well shut in for 27 hours, TSIP--800#. Bottom hole pressure 2730# at -3000' datum. Bottom hole pressure extrapolated to mid-point of perforations (5237') 2747# at -3075' datum. Bottom hole temperature equals 224 degrees F, no water in bomb. Open for 17 hours, 1/4" choke, flow rate was 53 BFPD, 3/10 of 1% BS&W, TFP--25#, CP--25#

2-15-56: 7 hour test on 16/64" choke, flow rate 47 BFPD, .4% basic sediment, TFP--25#, CP--25#.
17 hour test on 12/64" choke, flow rate 69 BFPD, .4% basic sediment, TFP--90#, CP--90#, total fluid the last 24 hours was 63 barrels.

2-17-56: 24 hour test on 1/8" choke, flow rate 39 BFPD, .4% basic sediment, TFP--275#, CP--300#.

ELECTRO LOG DATA

TYPE OF LOG	INTERVAL LOGGED
Schlumberger Electrical Survey 2"	1062'-8520'
Schlumberger Electrical Survey 5"	2000'-8520'
Schlumberger Microlog 5"	2000'-8518'
Schlumberger Microlog 25"	4500'-8514'
Schlumberger Temperature Survey	3500'-5913'
Schlumberger Gamma Ray Neutron	4800'-5909'
Schlumberger Gamma Ray Neutron	5400'-8520'

LOG TOPS

Eagle	1212	(+ 950)
Niobrara	2073	(+ 89)
Greenhorn	2415	(- 253)
Graneros	2632	(- 470)
Muddy	2995	(- 833)
Dakota Silt	3212	(-1050)
Swift	3678	(-1516)
Vanguard	3998	(-1836)
Rierdon	4178	(-2016)
Piper Shale	4365	(-2203)
Piper Limestone	4438	(-2276)
Gypsum Springs	4494	(-2932)
Spearfish	4704	(-2542)
Amsden	4780	(-2618)
Heath	4908	(-2746)
Otter	5059	(-2892)
Kibbey Sandstone	5217	(-3055)
Kibbey Limestone	5355	(-3193)
Madison	5460	(-3298)
"A" Zone	5591	(-3429)
"B-1" Zone	5720	(-3558)
"B-2" Zone	5737	(-3575)
"C" Zone Intercrystalline	5877	(-3715)
Lodgepole (?)	6585	(-4423)
Bakken	7258	(-5096)
Three Forks	7286	(-5124)
Nisku	7386	(-5224)
Ireton Shale	7472	(-5310)
Dawson Bay	8218	(-6056)
Ashern	8288	(-6126)
Silurian Interlake	8318	(-6156)
Interlake Porosity	8392	(-6230)

DRILL STEM TESTS

D.S.T. #1: 4958'-4970' with Halliburton, 1/2" choke, no water cushion. Tool open 4 hours, closed 30 minutes. Tool opened with strong blow, continued throughout test. Gas to surface in 3 hours and 25 minutes. Recovered 365' clean oil. Corrected gravity 42.6. 4205' salt water. IBHFP--25#; FBHFP--2080#; BHSIP--2635#; Hydro--2720#. Attempted to test from 4954'-4961', packer failed, misrun.

D.S.T. #2: 4955'-4962' reran with Halliburton, straddle packers, 1/2" bottom choke, no water cushion. Tool open 4 hours, closed 30 minutes. Tool opened with medium blow, continued throughout test. Recovered 5006' gas, 90' clean black 42.6 gravity oil, 2100' salt water. IBHFP--32#; FBHFP--1145#; BHSIP--2635#; Hydro--2720#. Bottom packer held.

D.S.T. #3: 4981'-4988' with Johnston, straddle tested, flowed muddy salty water to surface in 72 minutes, no show of oil, shut in for 30 minutes. IBHFP--340#; FBHFP--2200#; BHSIP--2480#; Hydro--2580#. Bottom packer held ok.

D.S.T. #4: 5072'-5084' with Halliburton, single packer, 1/2" bottom choke, no water cushion. Tool open 4 hours, closed 30 minutes. Tool opened with weak blow under 1" water, died in 105 minutes. Recovered 5' clean black oil, 15' rathole mud. IBHFP--15#; FBHFP--15#; BHSIP--65#; Hydro--2952#.

D.S.T. #5: 5220'-5230' with Halliburton, single packer, 1/2" bottom choke, no water cushion. Tool open 2 hours, closed 30 minutes. Tool opened with weak blow, died in 1 hour. Recovered 5' clean 36 gravity black oil, 30' oil-cut mud. IBHFP--15#; FBHFP--35#; BHSIP--1790#, Hydro--3040#.

D.S.T. #6 5253'-5265' with Halliburton, 1/2" bottom choke, no water cushion. Tool open 4 hours, closed 30 minutes. Tool opened with good blow, decreased to weak blow at end of test. Recovered 3677' gas, 90' clean 35 gravity black oil, 60' oil-and-gas-cut mud, 3322' salt water with show of oil. IBHFP--65#; FBHFP--1495#; BHSIP--2650#; Hydro--2692#. Bottom packer held ok.

D.S.T. #7: 5236'-5250' with Halliburton, straddle packers, 1/2" bottom choke, no water cushion. Tool open 4 hours, closed 30 minutes. Tool open with good blow, continued throughout test. Recovered 3821' gas, 2093' dark brown 39 gravity clean oil, 60' oil-and-gas-cut mud, 30' muddy salt water. IBHFP--32#; FBHFP--728#; BHSIP--2663#; Hydro--2952#. Bottom packer hold ok.

D.S.T. #8: 5368'-5382' with Halliburton, single packer, 1/2" bottom choke, no water cushion. Tool open 4 hours, closed 1 hour, Tool opened with very weak blow, continued throughout test. Recovered 5' very slightly oil-cut mud, no gas. IBHFP--15#; FBHFP--15#; BHSIP--32#; Hydro--3012#.

D.S.T. #9: 5458'-5475' with Halliburton, 1/2" bottom choke, no water cushion. Tool open 1 hour, closed 20 minutes. Tool opened with very weak blow. Recovered 5' rathole mud, no show of oil. IBHFP--15#; FBHFP--15#; BHSIP--65#; Hydro--3070#.

D.S.T. #10: 5470'-5498' with Halliburton, 1/2" bottom choke, no water cushion. Tool open 4 hours, closed 30 minutes. Tool opened with very weak blow, died in 80 minutes. Recovered 15' mud, no show of oil. IBHFP--15#; FBHFP--15#; BHSIP--15#; Hydro--3185#.

D.S.T. #11: 5561'-5568' with Johnston, straddle packers, 3/4" bottom choke, no water cushion. Tool open 4 hours, closed 30 minutes. Tool opened with very weak blow, died in 90 minutes. Recovered 32' of watery rathole mud, slightly salty, no show of oil. IBHFP--0#; FBHFP--0#; BHSIP--0#; Hydro--3100#. Bottom packer held.

D.S.T. #12: 5543'-5557' with Johnston, straddle packers, 3/4" bottom choke, no water cushion. Tool open 4 hours, closed 30 minutes. Tool opened with very weak blow, died in 60 minutes. Recovered 20' of watery rathole mud, slightly salty, no show of oil. IBHFP--0#; FBHFP--0#; BHSIP--0#; Hydro--3075#. Bottom packer held ok.

D.S.T. #13: 5585'-5595' ("A" Zone) with Johnston, straddle packers, no water cushion. Tool open 4 hours, closed 30 minutes. Tool opened with fair blow. Recovered 1100' gas, 1460' salty and sulphur water with a slight trace of oil. IBHFP--0#; FBHFP--1150#; BHSIP--2775#; Hyd--3150#.

D.S.T. #14: 5596'-5605' (Oolitic Zone) with Johnston, single packer. Tool open 2 hours, closed 30 minutes. Tool opened with fair blow, increased to strong blow in 45 minutes. Recovered 1080' of slightly oil-cut salt and sulphur water. IBHFP--0#; FBHFP--620#; BHSIP--2900#; Hyd--3180#.

D.S.T. #15: 5733'-5743' ("B-2" Zone) with Johnston, single packer. Tool open 2½ hours, closed 30 minutes. Tool opened with good blow, increased to strong blow in 23 minutes, and remained strong for rest of test. Recovered 90' gas, 180' oil-and-mud-cut salt water, and 1470' salt water. IBHFP--0#; FBHFP--890#; BHSIP--2830#; Hydro-3240#.

D.S.T. #16: 5712'-5724' (B-1 Zone) with Johnston, straddle packers, 1/2" bottom choke, no water cushion. Tool open 4 hours, closed 30 minutes. Tool opened with weak blow, continued throughout test. Recovered 70' oil-and-water-cut mud, 200' muddy salt water. IBHFP--0#; FBHFP--100#; BHSIP--2575#; Hydro--3210#. Bottom packer held ok.

D.S.T. #17: 5864'-5883' with Johnston, 3/4" bottom choke, no water cushion. Tool open 4 hours, closed 30 minutes. Recovered 1080' gas, 90' clean oil, 90' oil-cut mud, and 90' muddy salt and sulphur water. IBHFP--0#; FBHFP--200#; BHSIP--3000#; Hydro--3300#.

D.S.T. #18: 5895'-5913' with Johnston, single packer, 3/4" bottom choke, no water cushion. Tool open 4 hours, closed 30 minutes. Tool opened with medium blow, decreased to weak blow at end of test. Recovered 10' oil, 240' muddy salt water. IBHFP--0#; FBHFP--200#; BHSIP--2280#; Hydro--3300#.

D.S.T. #19: 5883'-5892' ("C" Zone) with Halliburton, straddle packers, 1/2" bottom choke, no water cushion. Tool open 3 hours, closed 30 minutes. Tool opened with good blow and continued throughout test. Recovered 1710' gas, 285' clean oil, 165' salt water. IBHFP--0#; FBHFP--150#; BHSIP--3000#; Hydro--3225#. Bottom packer held ok.

D.S.T. #20: 6247'-6261' with Halliburton, straddle packer test. Tool open 2 hours and 5 minutes, shut in 20 minutes. Tool opened with good blow, salt water to surface in 1 hour, 57 minutes, 1/2" bottom choke, no water cushion. IBHFP--367#; FBHFP--2772#; BHSIP--3132#; Hydro--3470#.

D.S.T. #21: 6226'-6241', misrun, top packer failed, reran DST #21 6226'-6241' with Halliburton straddle packers, 1/2" bottom choke, no water cushion. Tool open with strong blow, flowed salt water to surface in 60 minutes. Flowed to pit in 10 minutes, no trace of oil, closed in 30 minutes. Clock broke in top pressure device. No pressures recorded, bottom packer held ok.

D.S.T. #22: 6402'-6417' with Halliburton, single packer, 1/2" bottom choke, no water cushion. Tool open 4 hours, closed 30 minutes. Tool opened with weak blow, died in 140 minutes. Recovered 90' mud. IBHFP--15#; FBHFP--60#; BHSIP--1705#; Hydro--3515#.

D.S.T. #23: 7044'-7060' with Halliburton single packer, 1/2" bottom choke, no water cushion. Tool open 4 hours, closed 30 minutes. Tool opened with good blow, continued throughout test. Recovered 2184' gas, 90' gas-cut mud, no show of oil or water. IBHFP--32#; FBHFP--45#; BHSIP--62#; Hydro--4020#.

D.S.T. #24: 7278'-7288', packer failed, reran DST #24--7256'-7288' with Halliburton, 1/2" bottom choke, no water cushion. Tool open 2 hours, closed 20 minutes. Tool opened with medium blow, decreased to very weak blow in 1 hour, continued rest of test. Recovered 455' salt-water-cut mud. IBHFP--32#; FBHFP--175#; BHSIP--2615#; Hydro--4060. Test cut short to set out hole before dark.

D.S.T. #25: 7390'-7412' with Halliburton single packer test, 1/2" bottom choke, 1/4" top choke, no water cushion. Tool open 4 hours, closed 30 minutes. Tool opened with medium blow and continued throughout test. Recovered 364' gas, 91' muddy salt water with slight show of oil on top, and 3162' salt water. IBHFP--30#; FBHFP--1741#; BHSIP--3738#; Hydro--4020#.

D.S.T. #26: 7412'-7435', Tool open 4 hours, closed 30 minutes. Tool opened with medium blow, continued throughout test. Recovered 273' gas, 4317' salt water. IBHFP--60#; FBHFP--1995#; BHSIP--3738#; Hydro--4073#.

D.S.T. #27: 8381'-8393' with Halliburton, 1/2" bottom choke, 1410' water cushion, double packers. Tool open 1 hour and 30 minutes, closed 30 minutes. Tool opened with strong blow, flowed water cushion to surface 1 hour, flowed water cushion to pit 25 minutes, flowed salt water to pit 5 minutes, full 2" stream. IBHFP--755#, FBHFP--4160#, BHSIP--4240#, Hydro--4690#.

Form No. 2
GENERAL RULES
201, 202, 213,
216, 219, 233.1

(SUBMIT IN QUADRUPLICATE)
TO

OIL AND GAS CONSERVATION COMMISSION OF THE STATE OF MONTANA

BILLINGS OR SHELBY

NOTICE! THIS FORM BECOMES A PERMIT WHEN STAMPED APPROVED BY AN AGENT OF THE COMMISSION.

RECEIVED
SEP 23 1960
OIL AND GAS CONSERVATION COMMISSION OF THE STATE OF MONTANA

SUNDRY NOTICES AND REPORT OF WELLS

Notice of Intention to Drill		Subsequent Report of Water Shut-off	
Notice of Intention to Change Plans		Subsequent Report of Shooting, Acidizing, Cementing	
Notice of Intention to Test Water Shut-off		Subsequent Report of Altering Casing	
Notice of Intention to Redrill or Repair Well		Subsequent Report of Redrilling or Repair	
Notice of Intention to Shoot, Acidize, or Cement		Subsequent Report of Abandonment	
Notice of Intention to Pull or Alter Casing		Supplementary Well History	
Notice of Intention to Abandon Well		Report of Fracturing	
		Workover History	XX

(Indicate Above by Check Mark Nature of Report, Notice, or Other Data)

August 12, 19 60

Following is a {~~notice of intention to do work~~ / report of work done} on land {~~owned~~ / leased} described as follows:

LEASE BLM-A-029305A

MONTANA (State) — Roosevelt (County) — East Poplar (Field)

Well No. 63 — SW NE Section 27 (m. sec.) — 28N (Township) — 51E (Range) — M.P.M. (Meridian)

The well is located 1980 ft. from {N / ~~S~~} line and 1980 ft. from {E / ~~W~~} line of Sec. 27

(Locate accurately on Plat on back of this form the well location, and show lease boundary.)

The elevation of the derrick floor above the sea level is 2162'

READ CAREFULLY — DETAILS OF PLAN OF WORK — READ CAREFULLY

(State names of and expected depths to objective sands; show size, weights, and lengths of proposed casings; indicate mudding jobs, cementing points, and all other important proposed work, particularly all details results Shooting, Acidizing, Fracturing.)

DETAILS OF WORK
RESULT

SEE ATTACHED SHEETS.

RECEIVED
AUG 19 1960
OIL AND GAS CONSERVATION COMMISSION OF THE STATE OF MONTANA - BILLINGS

U.S.G.S. approved 8-15-60
Approved subject to conditions on reverse of form

Date 9-2-60

By [signature] Title [signature]

District Office Agent

Company MURPHY CORPORATION

By [signature]

Title Field Production Superintendent

Address P. O. Box 547, Poplar, Montana

NOTE:—Reports on this Form to be submitted to the District Agent for Approval in Quadruplicate.

WHEN USED AS PERMIT TO DRILL, THIS EXPIRES 90 DAYS FROM DATE OF APPROVAL

OVER

Locate well by footage measurement from legal subdivision line, lease or property line and nearest drilling or producible well, if any.

Form No. 2
File at
Billings
or Shelby

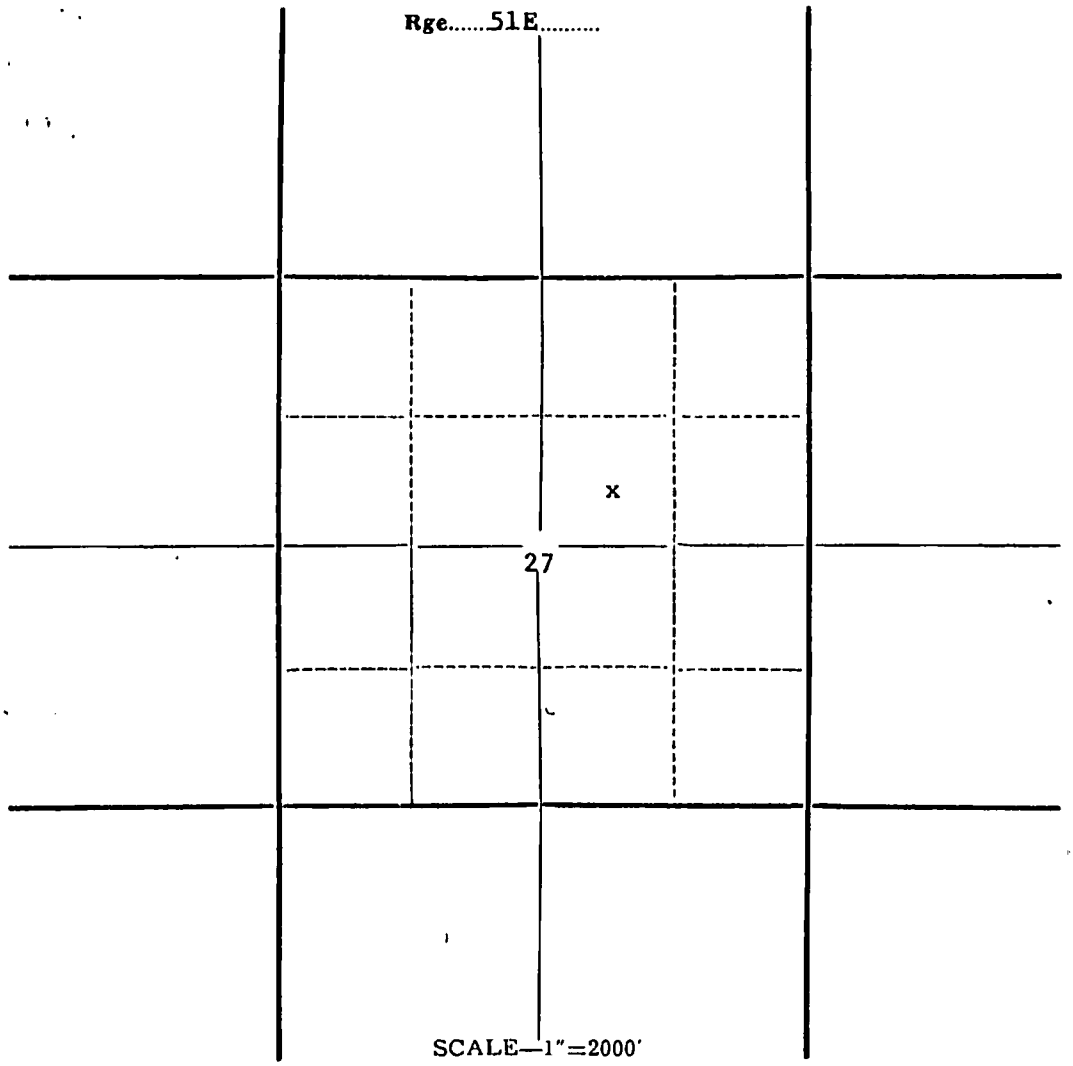
Rge.....51E.....

Form No. 2
File at
Billings
or Shelby

Locate
Well
Correctly

Locate
Lease
Boundary

Twp...28N.....



SCALE—1"=2000'

THE NOTICE OF INTENTION TO DRILL THIS WELL IS APPROVED SUBJECT TO THE FOLLOWING CONDITIONS:

1. Any person, before commencing the drilling of any oil or gas well, shall secure from the commission a drilling permit and shall pay to the commission therefor for the following amounts: for each well whose estimated depth is thirty-five hundred (3500) feet or less, twenty-five dollars ($25.00); from thirty-five hundred and one (3501) feet to seven thousand (7000) feet, seventy-five dollars ($75.00); seven thousand (7000) feet and deeper, one hundred fifty dollars ($150.00).
2. No well is to be spudded in unless the proper surety drilling bond has been posted and approved by the Oil and Gas Conservation Commission of the State of Montana.
3. Cable tool operators must construct an adequate sump to contain all mud and water bailed from the hole.
4. Surface or conductor casing must be properly cemented by an approved method to act as a tie in case an unexpected flow of oil, gas, or water should be encountered, unless special permission has been granted for formation shut-off.
5. Any contemplated change in status of a well such as to plug and abandon, deepen, plug back, redrill, alter casing, etc., must be presented on Sundry Notices and Report of Wells form for approval by agent prior to commencement of work.
6. All substantial showings of oil or gas must be tested for commercial possibilities before drilling ahead. Each such showing must be adequately protected by casing, mud or cement, as drilling progresses.
7. The production string must be cemented unless a formation shut-off or packer is approved by the agent. Sufficient cement must be used to protect the casing and possible productive formation exposed in the process of drilling not otherwise protected.
8. All production strings of casing must be tested by bailing or pressure to determine if there is a tight bond with the formation or possible leaks in the casing. The results of the test must be reported on Sundry Notices and Report of Wells form, said report to include the size, weight, thread and length of casing, amount of cement used, and date work is done. If test shows failure, the defect must be corrected before any drilling operations are resumed.
9. A satisfactory drilling record must be kept for each tour, showing top and thickness of each and all formations drilled and all other information of value, one copy of which is to be kept at the rig while drilling is in progress for examination when an agent visits the well.
10. All producing wells must be marked with name of the operator, number of the well, and location, using reasonable precautions to preserve these markings at all times.
11. Copies of all directional surveys, electrical logs, or tops from electrical log if electric survey is run, formation tests, and cementing record, as furnished by the cementing company, etc., must be filed with the State Inspector of the district together with four copies of the log, upon completion of the well.
12. All work must be done in conformity with the regulations of the Oil & Gas Conservation Commission of the State of Montana, as contained in "General Rules and Regulations," and amendments thereto, as well as regulations prescribed in lieu thereof.

WORKOVER HISTORY NO. 2

July 25, 1960

Lease and Well No. East Poplar Unit Well No. 63

Field: East Poplar Unit County: Roosevelt State: Montana

Well Location: SW NE Section 27, T28N, R51E

Status Prior to Present Job:

Date Completed: February 8, 1956 Date of Last Workover: November 8,1956

TD: 8521' PBTD: 5310' Producing Zone: Kibbey Sand

Perforations: 5231-5243' Cumulative Production: 5,095 BO, 6,768 BW

Latest Test: 192 BFPD, 91% Water (16 BOPD, 176 BWPD)

Summary of Workover:

7-12-60 PBTD 5310'. Drilling on Halliburton Packer at 5345'. Moved in rig to drill out packers and recomplete in the "B " Zone. Made trip with tubing to pick up 4 3/4" bit. Washed down to solid bottom. Drilled cement from 5316' to 5345;. Circulated 1 1/2 hours and shut in.

7-13-60 PBTD 5310'. Running tubing with new bit. Drilled on Model "C" Halliburton production packer at 5345'. Made 4' of hole to 5349'. Pulled tubing to change bits.

7-14-60 Drilling on packer at 5556'. Drilled remainder of packer at 5345'. Then drilled 10' of cement. Ran tubing, found top of cement on second packer at 5496'. Drilled cement from 5496 to 5553', then drilled 3' on second packer. Shut in overnight.

7-15-60 PBTD 5817'. Preparing to run tubing with Baker full bore packer. Drilled up remainder of packer, then drilled 30' hard cement. Ran bit to bottom 5817', circulated 2 hours; pulled tubing. Ran Gamma Ray Neutron log from 5817-4800'. Perforated "B " Zone (5783-93') with Schlumberger 3 5/8" jet gun 4 SPF. Shut in overnight.

7-16-60 PBTD 5821'. Well shut in overnight. Had 500' water with slight acid taste fillup. Ran swab each 30 minutes for 4 hours, no fluid. Pulled packer and ran 4 3/4" Hughes bit. Drilled junk from 5817' to 5821'. Shut well in overnight.

7-17-60 PBTD 5848'. Drilled cement from 5821' to 5848'. Reversed circulation 1 1/2 hours. Pulled bit and perforated "B " Zone with Lane Wells Type E bullet gun from 5809' to 5827' with 4 SPF. Going in hole with Baker full bore packer to acidize and test.

7-18-60 PBTD 5817'. Swabbing. Ran tubing with Baker full bore packer and 13' stinger. Set packer at 5775'. Swabbed tubing dry. Waited 1 hour, made dry run. No fluid movement. Acidized with 500 gallons Dowell etching acid. Pressured upon formation and soaked acid for 20 minutes. Formation broke with 1½ bbls. acid in at 3900# back to 3000#. Injected remainder of acid at rate of 1 BPM at 3000#. Ten minute bleed down pressure 2800#. Swabbed to pit, recovering spent acid and water. Swabbed tubing dry. Let set overnight.

7-19-60 PBTD 5848'. Swab testing. Set Baker full bore packer at 5832'. Tested below perforations (5832-5848') with 2000#. Held ok. Reset packer at 5795'. Tested between "B" Zone perforations with 2000#. Held ok. Released packer. Spotted 500 gallons of Dowell etching acid on perforations 5809-5827'. Reset packer at 5795'. Pressured formation to 2600#, bled to 1900# in 5 minutes. Increased to 2800#, bled to 2000# in 5 minutes; increased to 3200#, bled to 2000# in 8 minutes; increased to 3800#, bled to 2000# in 8 minutes; increased to 3800# with 1½ bbls. out on formation. "B" Zones communicated. Reset packer at 5778'. Injected remainder of acid at rate of 1½ BPM at 3200#. Overflushed 4 bbls. Swabbed acid water back and swabbed tubing dry. Packer gave way. Reset packer at 5774'. Swabbed tubing dry, packer gave way. Pulled out of hole for new packer.

7-20-60 PBTD 5848'. Ran Baker full bore packer. Set at 5795' to swab test for communication between "B" Zone perforations. Found zones communicated. Reset packer at 5758'. Swabbed tubing dry. Ran swab every hour for 4 hours. Recovered approximately 200' of salt water per hour. Released packer and pulled out of hole. Ran 186 joints 5811' 2 3/8" tubing in hole open ended. Bottom of tubing at 5817'. Closed well in. Rigged down unit. Temporarily abandoned.

Final Summary of Workover:

1. Perforations: "B" (5783-93') (5809-27')
2. Final PBTD: 5848'
3. Initial Potential after Workover: 5 Barrels Salt Water Per Hour
4. Name of Producing Zone: "B"
5. Downhole Equipment:
   10 3/4" casing at 1062'
   5 1/2" casing at 5945'
   2 3/8" tubing at 5817'
6. Results of Workover: Test of "B" Zones unsuccessful. Temporarily abandoned. Making study of "C" Zone.

Form No. 2
GENERAL RULES
201, 202, 213,
216, 219, 233.1

(SUBMIT IN QUADRUPLICATE)
TO
OIL AND GAS CONSERVATION COMMISSION
OF THE STATE OF MONTANA
BILLINGS OR SHELBY

NOTICE!
THIS FORM BECOMES A PERMIT WHEN STAMPED APPROVED BY AN AGENT OF THE COMMISSION.

RECEIVED
SEP 15 1955
OIL AND GAS CONSERVATION COMMISSION
STATE OF MONTANA
BILLINGS

SUNDRY NOTICES AND REPORT OF WELLS

Notice of Intention to Drill		Subsequent Report of Water Shut-off	
Notice of Intention to Change Plans		Subsequent Report of Shooting, Acidizing, or Cementing	
Notice of Intention to Test Water Shut-off		Subsequent Report of Altering Casing	
Notice of Intention to Redrill or Repair Well		Subsequent Report of Redrilling or Repair	
Notice of Intention to Shoot, Acidize, or Cement		Subsequent Report of Abandonment	
Notice of Intention to Pull or Alter Casing		Supplementary Well History	X
Notice of Intention to Abandon Well		Report of Fracturing	

(Indicate Above by Check Mark Nature of Report, Notice, or Other Data)

September 14, 19 55

Following is a {notice of intention to do work / report of work done} on land {owned / leased} described as follows:

LEASE BLM-A-029305A

MONTANA (State) Roosevelt (County) East Poplar (Field)

Well No. 63 SW NE (m. sec.) Section 27 28N (Township) 51 (Range) M.P.M. (Meridian)

The well is located 1980 ft. from {N / S} line and 1980 ft. from {E / W} line of Sec. 27

(Locate accurately on Plat on back of this form the well location, and show lease boundary.)

The elevation of the derrick floor above the sea level is 2162' K.B.

READ CAREFULLY — DETAILS OF PLAN OF WORK — READ CAREFULLY

(State names of and expected depths to objective sands; show size, weights, and lengths of proposed casings; indicate mudding jobs, cementing points, and all other important proposed work, particularly all details results Shooting, Acidizing, Fracturing.)

DETAILS OF WORK
RESULT

Spudded 7:30 P.M., 9-11-55. Ran 34 jts. 1049.01' of 10 3/4" 40.50# H-40 and J-55, 8rd. thd., R-2 American casing. Landed 13.00' below RKB, 10' off bottom. Cemented with 700 sacks of Ideal regular cement with 2 percent $CaCl_2$. Clean cement to surface. Plug down at 1:30 P.M., 9-13-55. Released pressure. Float held OK. Bumped plug with 1000#.

Approved U. S. G. S. 9-19-55

Approved subject to conditions on reverse of form

Date 9-24-55

By Mark P. Hurley Geol-Eng.
Title
District Office Agent

Company MURPHY CORPORATION

By Harold Milam
Harold Milam
Title Division Production Superintendent

Address 602 Midland National Bank Bldg.

NOTE:—Reports on this Form to be submitted to the District Agent for Approval in Quadruplicate.

WHEN USED AS PERMIT TO DRILL, THIS EXPIRES 90 DAYS FROM DATE OF APPROVAL.

16M--5-55

OVER

Locate well by footage measurement from legal subdivision line, lease or property line and nearest drilling or producible well, if any.

Form No. 2
File at
Billings
or Shelby

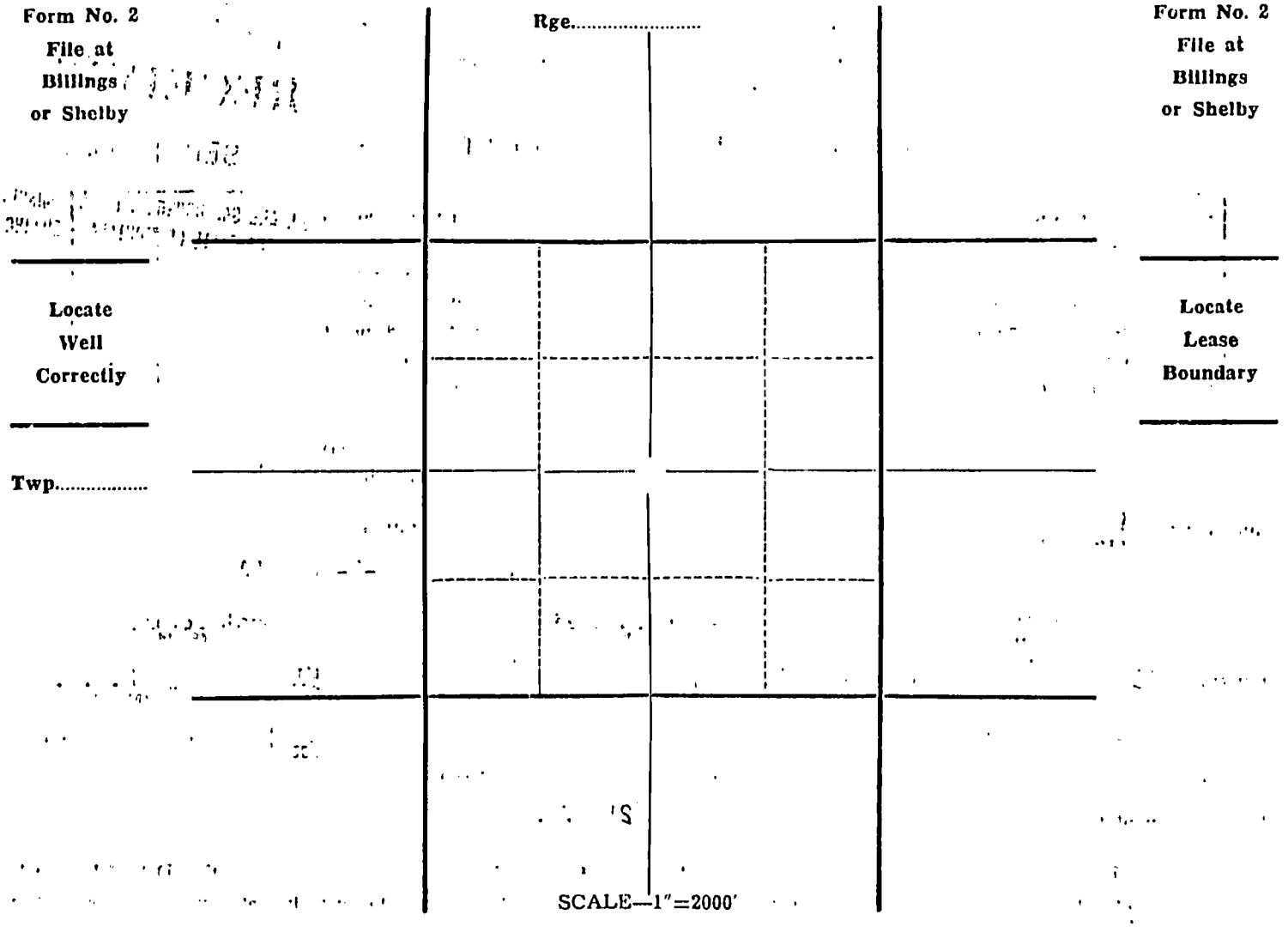
Rge.....

Form No. 2
File at
Billings
or Shelby

Locate
Well
Correctly

Locate
Lease
Boundary

Twp.....



THE NOTICE OF INTENTION TO DRILL THIS WELL IS APPROVED SUBJECT TO THE FOLLOWING CONDITIONS:

1. Any person, before commencing the drilling of any oil or gas well, shall secure from the commission a drilling permit and shall pay to the commission therefor for the following amounts: for each well whose estimated depth is thirty-five hundred (3500) feet or less, twenty-five dollars ($25.00); from thirty-five hundred and one (3501) feet to seven thousand (7000) feet, seventy-five dollars ($75.00); seven thousand (7000) feet and deeper, one hundred fifty dollars ($150.00).
2. No well is to be spudded in unless the proper surety drilling bond has been posted and approved by the Oil and Gas Conservation Commission of the State of Montana.
3. Cable tool operators must construct an adequate sump to contain all mud and water bailed from the hole.
4. Surface or conductor casing must be properly cemented by an approved method to act as a tie in case an unexpected flow of oil, gas, or water should be encountered, unless special permission has been granted for formation shut-off.
5. Any contemplated change in status of a well such as to plug and abandon, deepen, plug back, redrill, alter casing, etc., must be presented on Sundry Notices and Report of Wells form for approval by agent prior to commencement of work.
6. All substantial showings of oil or gas must be tested for commercial possibilities before drilling ahead. Each such showing must be adequately protected by casing, mud or cement, as drilling progresses.
7. The production string must be cemented unless a formation shut-off or packer is approved by the agent. Sufficient cement must be used to protect the casing and possible productive formation exposed in the process of drilling not otherwise protected.
8. All production strings of casing must be tested by bailing or pressure to determine if there is a tight bond with the formation or possible leaks in the casing. The results of the test must be reported on Sundry Notices and Report of Wells form, said report to include the size, weight, thread and length of casing, amount of cement used, and date work is done. If test shows failure, the defect must be corrected before any drilling operations are resumed.
9. A satisfactory drilling record must be kept for each tour, showing top and thickness of each and all formations drilled and all other information of value, one copy of which is to be kept at the rig while drilling is in progress for examination when an agent visits the well.
10. All producing wells must be marked with name of the operator, number of the well, and location, using reasonable precautions to preserve these markings at all times.
11. Copies of all directional surveys, electrical logs, or tops from electrical log if electric survey is run, formation tests, and cementing record, as furnished by the cementing company, etc., must be filed with the State Inspector of the district together with four copies of the log, upon completion of the well.
12. All work must be done in conformity with the regulations of the Oil & Gas Conservation Commission of the State of Montana, as contained in "General Rules and Regulations," and amendments thereto, as well as regulations prescribed in lieu thereof.

Form No. 2

GENERAL RULES
201, 202, 213,
216, 219, 233.

(SUBMIT IN QUADRUPLICATE)

TO

OIL AND GAS CONSERVATION COMMISSION
OF THE STATE OF MONTANA
BILLINGS OR SHELBY

NOTICE!
THIS FORM BECOMES A PERMIT WHEN STAMPED APPROVED BY AN AGENT OF THE COMMISSION.

RECEIVED
OCT 27 1955
OIL AND GAS CONSERVATION COMMISSION
OF THE STATE OF MONTANA
BILLINGS

SUNDRY NOTICES AND REPORT OF WELLS

Notice of Intention to Drill		Subsequent Report of Water Shut-off	
Notice of Intention to Change Plans		Subsequent Report of Shooting, Acidizing, Cementing	
Notice of Intention to Test Water Shut-off		Subsequent Report of Altering Casing	
Notice of Intention to Redrill or Repair Well		Subsequent Report of Redrilling or Repair	
Notice of Intention to Shoot, Acidize, or Cement		Subsequent Report of Abandonment	
Notice of Intention to Pull or Alter Casing		Supplementary Well History	X
Notice of Intention to Abandon Well		Report of Fracturing	

(Indicate Above by Check Mark Nature of Report, Notice, or Other Data)

October 25, 19 55

Following is a {notice of intention to do work / report of work done} on land {owned / leased} described as follows:

LEASE BLM-A 029305A

MONTANA (State) Roosevelt (County) East Poplar (Field)

Well No. 63 SW NE Section 27 (m. sec.) 28N (Township) 51E (Range) M.P.M. (Meridian)

The well is located 1980 ft. from {N / S} North line and 1980 ft. from {E / W} East line of Sec. 27

(Locate accurately on Plat on back of this form the well location, and show lease boundary.)

The elevation of the derrick floor above the sea level is 2162' K.B.

READ CAREFULLY — DETAILS OF PLAN OF WORK — READ CAREFULLY

(State names of and expected depths to objective sands; show size, weights, and lengths of proposed casings; indicate mudding jobs, cementing points, and all other important proposed work, particularly all details results Shooting, Acidizing, Fracturing.)

DETAILS OF WORK
RESULT

Drill stem test record to date attached.

Approved subject to conditions on reverse of form

Date 10-29-55

By Mark P. Hunting Geol. Eng
Title
District Office Agent

Company MURPHY CORPORATION

By J. D. Langford

Title Assistant Division Manager

Address 602 Midland Bank Bldg, Billings

NOTE:—Reports on this Form to be submitted to the District Agent for Approval in Quadruplicate.

WHEN USED AS PERMIT TO DRILL, THIS EXPIRES 90 DAYS FROM DATE OF APPROVAL

15M--5-55

OVER

Locate well by footage measurement from legal subdivision line, lease or property line and nearest drilling or producible well, if any.

Form No. 2
File at
Billings
or Shelby

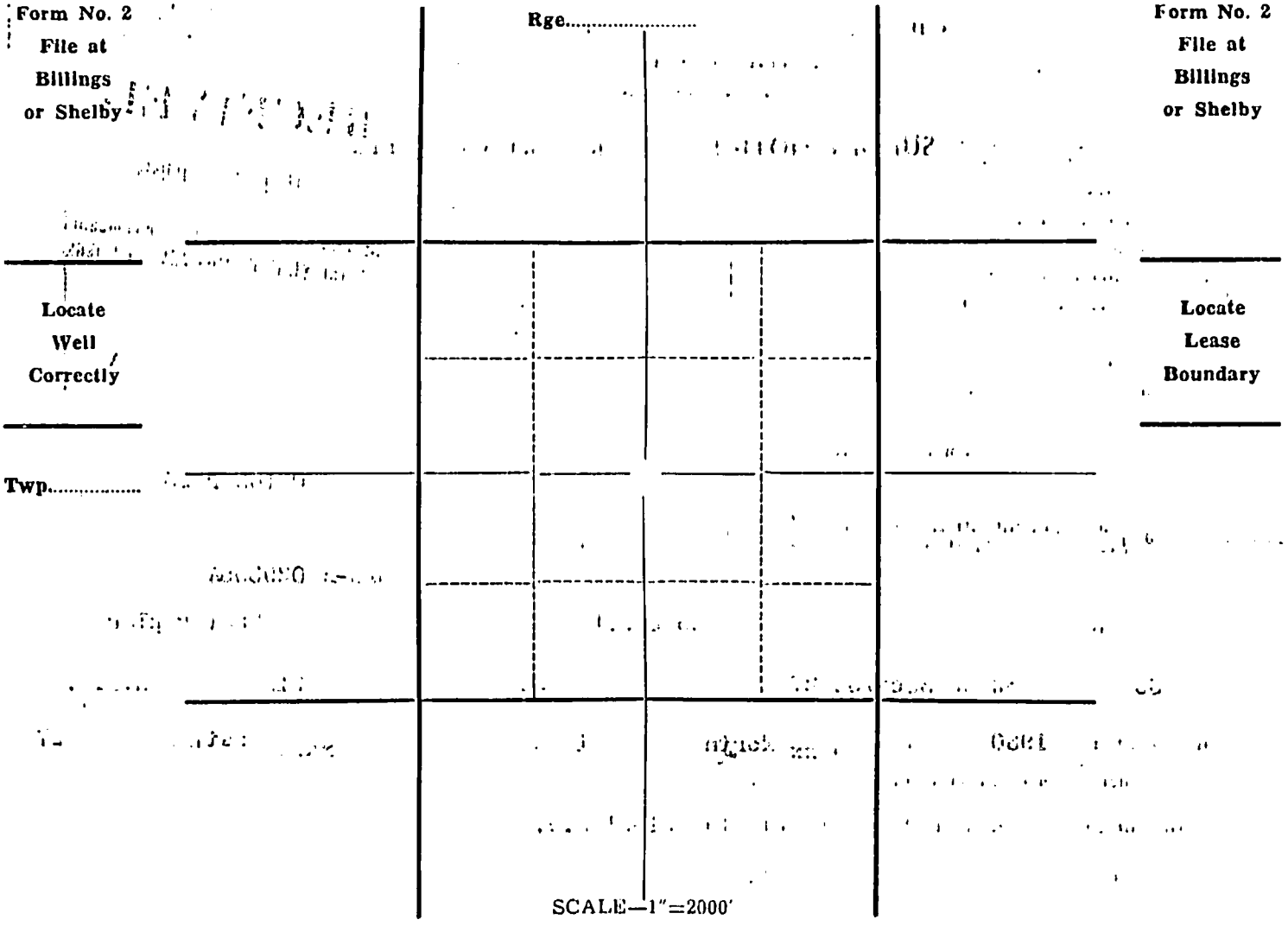
Rge.....

Form No. 2
File at
Billings
or Shelby

Locate
Well
Correctly

Locate
Lease
Boundary

Twp.....



THE NOTICE OF INTENTION TO DRILL THIS WELL IS APPROVED SUBJECT TO THE FOLLOWING CONDITIONS:

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9. A satisfactory drilling record must be kept for each tour, showing top and thickness of each and all formations drilled and all other information of value, one copy of which is to be kept at the rig while drilling is in progress for examination when an agent visits the well.
10. All producing wells must be marked with name of the operator, number of the well, and location, using reasonable precautions to preserve these markings at all times.
11. Copies of all directional surveys, electrical logs, or tops from electrical log if electric survey is run, formation tests, and cementing record, as furnished by the cementing company, etc., must be filed with the State Inspector of the district together with four copies of the log, upon completion of the well.
12. All work must be done in conformity with the regulations of the Oil & Gas Conservation Commission of the State of Montana, as contained in "General Rules and Regulations," and amendments thereto, as well as regulations prescribed in lieu thereof.

Form No. 2
GENERAL RULES
201, 202, 213,
216, 219, 233.1

(SUBMIT IN QUADRUPLICATE)
TO
OIL AND GAS CONSERVATION COMMISSION
OF THE STATE OF MONTANA
BILLINGS OR SHELBY

NOTICE!
THIS FORM BECOMES A PERMIT WHEN STAMPED APPROVED BY AN AGENT OF THE COMMISSION.

RECEIVED
JAN 4 1956
OIL AND GAS CONSERVATION COMMISSION
OF THE STATE OF MONTANA - BILLINGS

SUNDRY NOTICES AND REPORT OF WELLS

Notice of Intention to Drill		Subsequent Report of Water Shut-off	
Notice of Intention to Change Plans		Subsequent Report of Shooting, Acidizing, Cementing	
Notice of Intention to Test Water Shut-off		Subsequent Report of Altering Casing	
Notice of Intention to Redrill or Repair Well		Subsequent Report of Redrilling or Repair	
Notice of Intention to Shoot, Acidize, or Cement		Subsequent Report of Abandonment	
Notice of Intention to Pull or Alter Casing		Supplementary Well History	X
Notice of Intention to Abandon Well		Report of Fracturing	

(Indicate Above by Check Mark Nature of Report, Notice, or Other Data)

December 30, 19 55

Following is a {notice of intention to do work / report of work done} on land {owned / leased} described as follows:

LEASE BLM-A 029305A

MONTANA (State) Roosevelt (County) East Poplar (Field)

Well No. 63 SW NE (m. sec.) Section 27 28N (Township) 51E (Range) M.P.M. (Meridian)

The well is located 1980 ft. from {N / S} line and 1980 ft. from {E / W} line of Sec. 27

(Locate accurately on Plat on back of this form the well location, and show lease boundary.)

The elevation of the derrick floor above the sea level is 2162' K.B.

READ CAREFULLY — DETAILS OF PLAN OF WORK — READ CAREFULLY

(State names of and expected depths to objective sands; show size, weights, and lengths of proposed casings; indicate mudding jobs, cementing points, and all other important proposed work, particularly all details results Shooting, Acidizing, Fracturing.)

DETAILS OF WORK
RESULT

Report of work performed to date attached.

Approved U.S.G.S. 1-4-56

Approved subject to conditions on reverse of form

Date 1/5/56

By [signature] Supervisor
Title
District Office Agent

Company MURPHY CORPORATION

By [signature]
Harold Milam

Title Division Production Superintendent

Address 602 Midland Bank Bldg., Billings, Mont.

NOTE:—Reports on this Form to be submitted to the District Agent for Approval in Quadruplicate.

WHEN USED AS PERMIT TO DRILL, THIS EXPIRES 90 DAYS FROM DATE OF APPROVAL

eg

15M--5-55

OVER

Locate well by footage measurement from legal subdivision line, lease or property line and nearest drilling or producible well, if any.

Form No. 2
File at
Billings
or Shelby

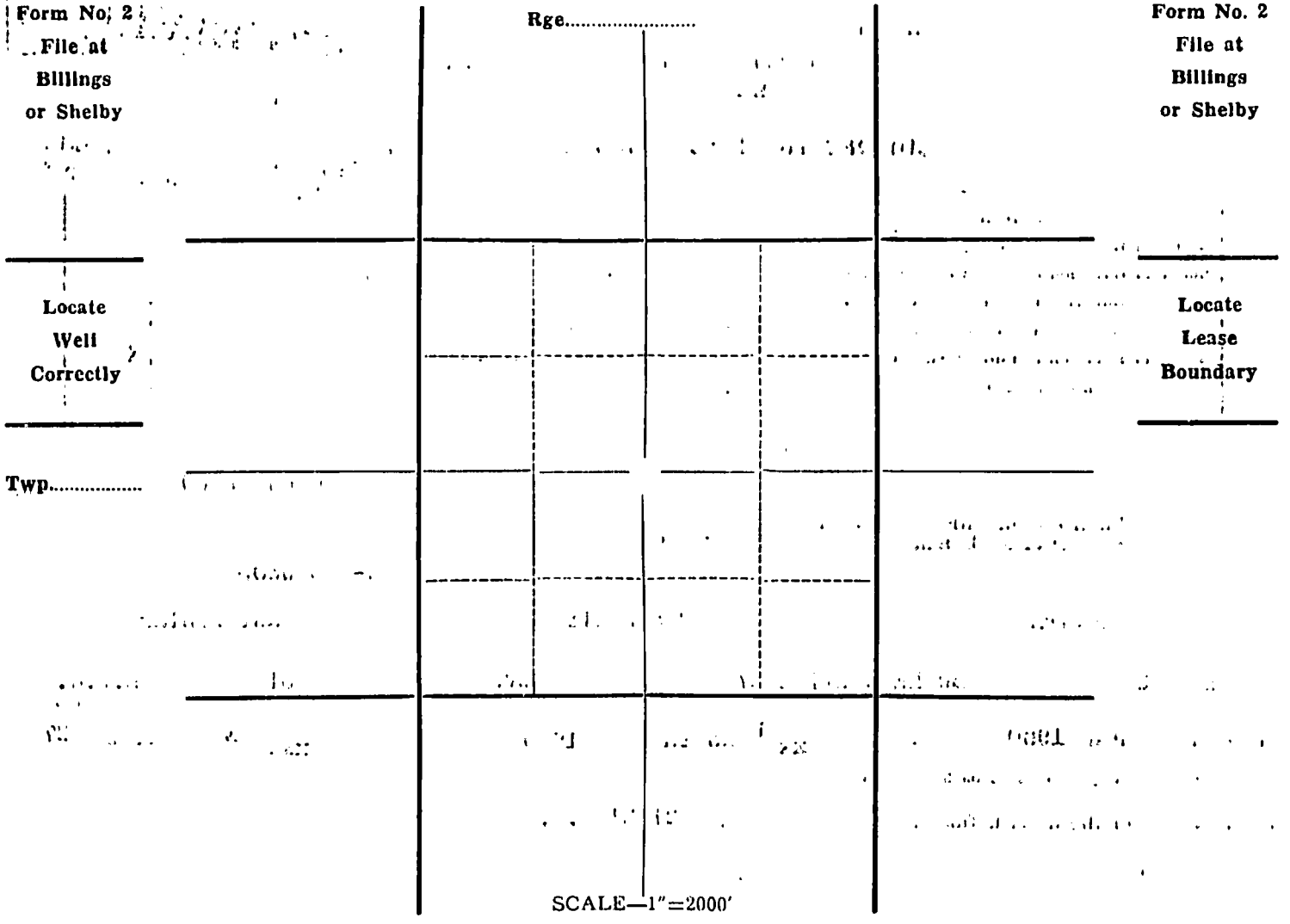
Rge.....

Form No. 2
File at
Billings
or Shelby

Locate
Well
Correctly

Locate
Lease
Boundary

Twp.....



SCALE—1"=2000'

THE NOTICE OF INTENTION TO DRILL THIS WELL IS APPROVED SUBJECT TO THE FOLLOWING CONDITIONS:

1. Any person, before commencing the drilling of any oil or gas well, shall secure from the commission a drilling permit and shall pay to the commission therefor for the following amounts: for each well whose estimated depth is thirty-five hundred (3500) feet or less, twenty-five dollars ($25.00); from thirty-five hundred and one (3501) feet to seven thousand (7000) feet, seventy-five dollars ($75.00); seven thousand (7000) feet and deeper, one hundred fifty dollars ($150.00).
2. No well is to be spudded in unless the proper surety drilling bond has been posted and approved by the Oil and Gas Conservation Commission of the State of Montana.
3. Cable tool operators must construct an adequate sump to contain all mud and water bailed from the hole.
4. Surface or conductor casing must be properly cemented by an approved method to act as a tie in case an unexpected flow of oil, gas, or water should be encountered, unless special permission has been granted for formation shut-off.
5. Any contemplated change in status of a well such as to plug and abandon, deepen, plug back, redrill, alter casing, etc., must be presented on Sundry Notices and Report of Wells form for approval by agent prior to commencement of work.
6. All substantial showings of oil or gas must be tested for commercial possibilities before drilling ahead. Each such showing must be adequately protected by casing, mud or cement, as drilling progresses.
7. The production string must be cemented unless a formation shut-off or packer is approved by the agent. Sufficient cement must be used to protect the casing and possible productive formation exposed in the process of drilling not otherwise protected.
8. All production strings of casing must be tested by bailing or pressure to determine if there is a tight bond with the formation or possible leaks in the casing. The results of the test must be reported on Sundry Notices and Report of Wells form, said report to include the size, weight, thread and length of casing, amount of cement used, and date work is done. If test shows failure, the defect must be corrected before any drilling operations are resumed.
9. A satisfactory drilling record must be kept for each tour, showing top and thickness of each and all formations drilled and all other information of value, one copy of which is to be kept at the rig while drilling is in progress for examination when an agent visits the well.
10. All producing wells must be marked with name of the operator, number of the well, and location, using reasonable precautions to preserve these markings at all times.
11. Copies of all directional surveys, electrical logs, or tops from electrical log if electric survey is run, formation tests, and cementing record, as furnished by the cementing company, etc., must be filed with the State Inspector of the district together with four copies of the log, upon completion of the well.
12. All work must be done in conformity with the regulations of the Oil & Gas Conservation Commission of the State of Montana, as contained in "General Rules and Regulations," and amendments thereto, as well as regulations prescribed in lieu thereof.

Form No. 2
GENERAL RULES
201, 202, 213,
216, 219, 233.1

(SUBMIT IN QUADRUPLICATE)
TO
OIL AND GAS CONSERVATION COMMISSION
OF THE STATE OF MONTANA
BILLINGS OR SHELBY

NOTICE!
THIS FORM BECOMES A PERMIT WHEN STAMPED APPROVED BY AN AGENT OF THE COMMISSION.

RECEIVED
814
AUG 21 1957
OIL AND GAS CONSERVATION COMMISSION OF THE STATE OF MONTANA

SUNDRY NOTICES AND REPORT OF WELLS

Notice of Intention to Drill		Subsequent Report of Water Shut-off	
Notice of Intention to Change Plans		Subsequent Report of Shooting, Acidizing, Cementing	
Notice of Intention to Test Water Shut-off		Subsequent Report of Altering Casing	
Notice of Intention to Redrill or Repair Well		Subsequent Report of Redrilling or Repair	
Notice of Intention to Shoot, Acidize, or Cement		Subsequent Report of Abandonment	
Notice of Intention to Pull or Alter Casing		Supplementary Well History	
Notice of Intention to Abandon Well		Report of Fracturing	
Notice of Intention to Pump Test	XX		

(Indicate Above by Check Mark Nature of Report, Notice, or Other Data)

August 15, 1957

Following is a {notice of intention to do work / ~~report of work done~~} on land {~~patented~~ / leased} described as follows:

LEASE BIM -A 029305A

MONTANA (State) Roosevelt (County) East Poplar Unit (Field)

Well No. 63 SW NE Section 27 (m. sec.) 28N (Township) 51E (Range) M.P.M. (Meridian)

The well is located 1980 ft. from {N / ~~S~~} line and 1980 ft. from {E / ~~W~~} East line of Sec. 27

(Locate accurately on Plat on back of this form the well location, and show lease boundary.)

The elevation of the derrick floor above the sea level is 2162' K.B.

READ CAREFULLY — DETAILS OF PLAN OF WORK — READ CAREFULLY

(State names of and expected depths to objective sands; show size, weights, and lengths of proposed casings; indicate mudding jobs, cementing points, and all other important proposed work, particularly all details results Shooting, Acidizing, Fracturing.)

DETAILS OF WORK
RESULT

EPU No. 63 was temporarily abandoned on November 8, 1956. Will pump test the Kibbey Sandstone in order to further evaluate the possibility of commercial production.

RECEIVED
AUG 19 1957
OIL AND GAS CONSERVATION COMMISSION
OF THE STATE OF MONTANA - BILLINGS

Approved subject to conditions on reverse of form

Date 8-20-57

By [signature] Title

District Office Agent

Company MURPHY CORPORATION

By [signature]

Title Field Production Superintendent

Address Poplar, Montana

NOTE:—Reports on this Form to be submitted to the District Agent for Approval in Quadruplicate.

10M--1-56

OVER

Locate well by footage measurement from legal subdivision line, lease or property line and nearest drilling or producible well, if any.

Form No. 2
File at
Billings
or Shelby

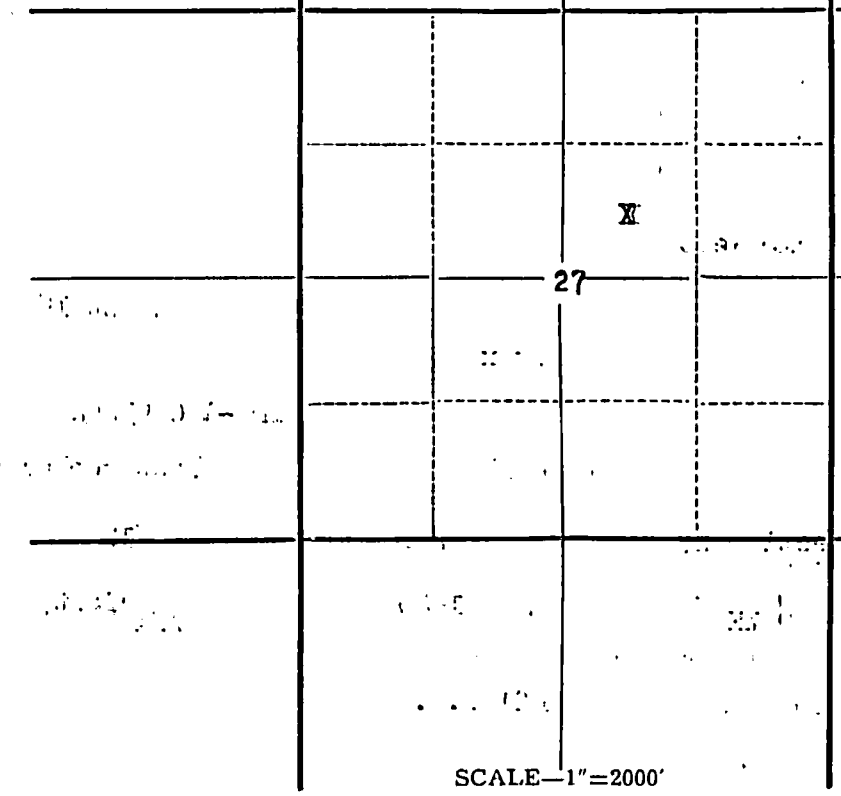
Rge. 51E

Form No. 2
File at
Billings
or Shelby

Locate
Well
Correctly

Locate
Lease
Boundary

Twp. 28N



SCALE—1"=2000'

THE NOTICE OF INTENTION TO DRILL THIS WELL IS APPROVED SUBJECT TO THE FOLLOWING CONDITIONS:

1. Any person, before commencing the drilling of any oil or gas well, shall secure from the commission a drilling permit and shall pay to the commission therefor for the following amounts: for each well whose estimated depth is thirty-five hundred (3500) feet or less, twenty-five dollars ($25.00); from thirty-five hundred and one (3501) feet to seven thousand (7000) feet, seventy-five dollars ($75.00); seven thousand (7000) feet and deeper, one hundred fifty dollars ($150.00).
2. No well is to be spudded in unless the proper surety drilling bond has been posted and approved by the Oil and Gas Conservation Commission of the State of Montana.
3. Cable tool operators must construct an adequate sump to contain all mud and water bailed from the hole.
4. Surface or conductor casing must be properly cemented by an approved method to act as a tie in case an unexpected flow of oil, gas, or water should be encountered, unless special permission has been granted for formation shut-off.
5. Any contemplated change in status of a well such as to plug and abandon, deepen, plug back, redrill, alter casing, etc., must be presented on Sundry Notices and Report of Wells form for approval by agent prior to commencement of work.
6. All substantial showings of oil or gas must be tested for commercial possibilities before drilling ahead. Each such showing must be adequately protected by casing, mud or cement, as drilling progresses.
7. The production string must be cemented unless a formation shut-off or packer is approved by the agent. Sufficient cement must be used to protect the casing and possible productive formation exposed in the process of drilling not otherwise protected.
8. All production strings of casing must be tested by bailing or pressure to determine if there is a tight bond with the formation or possible leaks in the casing. The results of the test must be reported on Sundry Notices and Report of Wells form, said report to include the size, weight, thread and length of casing, amount of cement used, and date work is done. If test shows failure, the defect must be corrected before any drilling operations are resumed.
9. A satisfactory drilling record must be kept for each tour, showing top and thickness of each and all formations drilled and all other information of value, one copy of which is to be kept at the rig while drilling is in progress for examination when an agent visits the well.
10. All producing wells must be marked with name of the operator, number of the well, and location, using reasonable precautions to preserve these markings at all times.
11. Copies of all directional surveys, electrical logs, or tops from electrical log if electric survey is run, formation tests, and cementing record, as furnished by the cementing company, etc., must be filed with the State Inspector of the district together with four copies of the log, upon completion of the well.
12. All work must be done in conformity with the regulations of the Oil & Gas Conservation Commission of the State of Montana, as contained in "General Rules and Regulations," and amendments thereto, as well as regulations prescribed in lieu thereof.

Form No. 2
GENERAL RULES
201, 202, 213,
216, 219, 233.1

(SUBMIT IN QUADRUPLICATE)
TO
OIL AND GAS CONSERVATION COMMISSION
OF THE STATE OF MONTANA
BILLINGS OR SHELBY

NOTICE!
THIS FORM BECOMES A PERMIT WHEN STAMPED APPROVED BY AN AGENT OF THE COMMISSION.

DEC 1957

SUNDRY NOTICES AND REPORT OF WELLS

Notice of Intention to Drill		Subsequent Report of Water Shut-off	
Notice of Intention to Change Plans		Subsequent Report of Shooting, Acidizing, Cementing	
Notice of Intention to Test Water Shut-off		Subsequent Report of Altering Casing	
Notice of Intention to Redrill or Repair Well		Subsequent Report of Redrilling or Repair	
Notice of Intention to Shoot, Acidize, or Cement		Subsequent Report of Abandonment	
Notice of Intention to Pull or Alter Casing		Supplementary Well History	
Notice of Intention to Abandon Well Temporarily	XX	Report of Fracturing	

(Indicate Above by Check Mark Nature of Report, Notice, or Other Data)

December 2, 19 57

Following is a {notice of intention to do work / report of work done} on land {owned / leased} described as follows:

LEASE BIM-A-029305A

MONTANA (State) Roosevelt (County) East Poplar (Field)

Well No. E.P.U. No. 63 SW NE (m. sec.) Sec. 27 28N (Township) 51E (Range) MPM (Meridian)

The well is located 1980 ft. from {N / S} line and 1980 ft. from {E / W} line of Sec. 27

(Locate accurately on Plat on back of this form the well location, and show lease boundary.)

The elevation of the derrick floor above the sea level is 2162 KB

READ CAREFULLY — DETAILS OF PLAN OF WORK — READ CAREFULLY

(State names of and expected depths to objective sands; show size, weights, and lengths of proposed casings; indicate mudding jobs, cementing points, and all other important proposed work, particularly all details results Shooting, Acidizing, Fracturing.)

DETAILS OF WORK
RESULT

Pump tested the Kibbey Sandstone during the months of August, September, October and November, 1957. Averaged 7 BOPD and 53 BWPD.

Temporarily Abandoned. December 13, 1957

RECEIVED
DEC 5 1957
OIL AND GAS CONSERVATION COMMISSION
OF THE STATE OF MONTANA - BILLINGS

Approved subject to conditions on reverse of form
U.S.G.S. Approved 12-5-57
Date 12-6-57
By John R. Hogg
Title
District Office Agent

Company Murphy Corporation
By M. H. Johnson
Title Field Production Superintendent
Address Poplar, Montana

NOTE:—Reports on this Form to be submitted to the District Agent for Approval in Quadruplicate.

10M--1-56

OVER

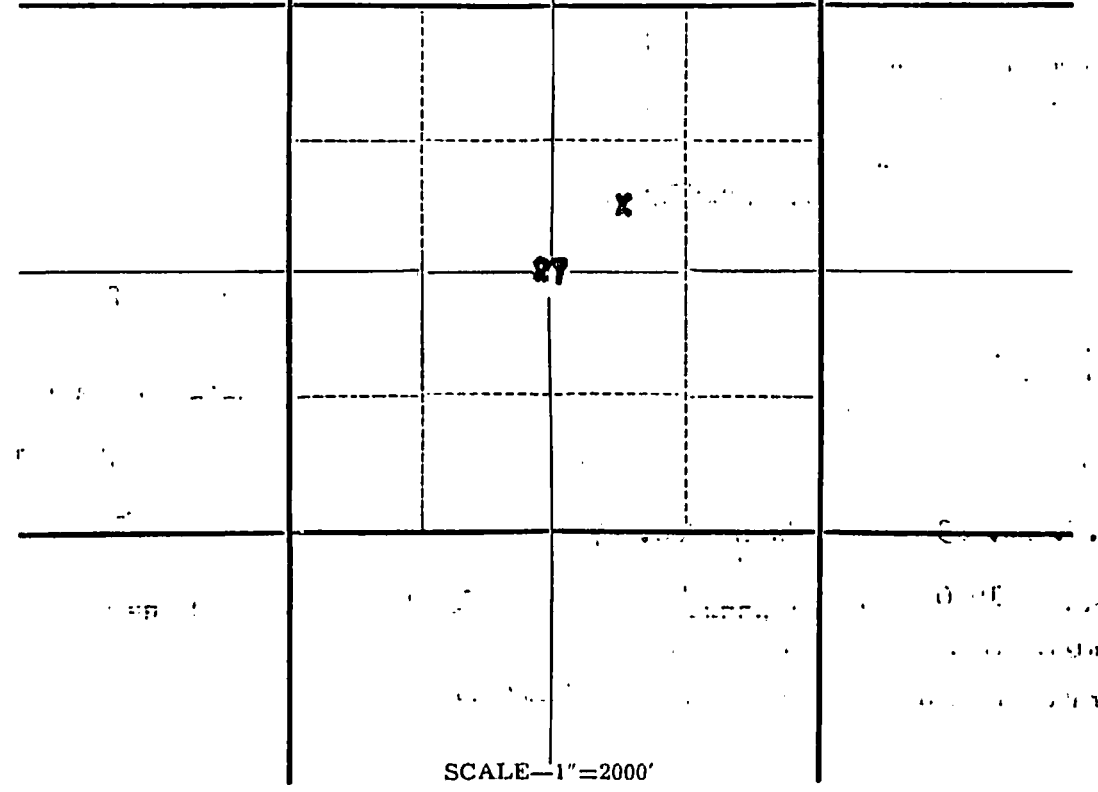
Locate well by footage measurement from legal subdivision line, lease or property line and nearest drilling or producible well, if any.

Form No. 2
File at
Billings
or Shelby

Rge. 31E

Form No. 2
File at
Billings
or Shelby

Locate
Well
Correctly



Locate
Lease
Boundary

Twp. 28N

SCALE—1"=2000'

THE NOTICE OF INTENTION TO DRILL THIS WELL IS APPROVED SUBJECT TO THE FOLLOWING CONDITIONS:

1. Any person, before commencing the drilling of any oil or gas well, shall secure from the commission a drilling permit and shall pay to the commission therefor for the following amounts: for each well whose estimated depth is thirty-five hundred (3500) feet or less, twenty-five dollars ($25.00); from thirty-five hundred and one (3501) feet to seven thousand (7000) feet, seventy-five dollars ($75.00); seven thousand (7000) feet and deeper, one hundred fifty dollars ($150.00).
2. No well is to be spudded in unless the proper surety drilling bond has been posted and approved by the Oil and Gas Conservation Commission of the State of Montana.
3. Cable tool operators must construct an adequate sump to contain all mud and water bailed from the hole.
4. Surface or conductor casing must be properly cemented by an approved method to act as a tie in case an unexpected flow of oil, gas, or water should be encountered, unless special permission has been granted for formation shut-off.
5. Any contemplated change in status of a well such as to plug and abandon, deepen, plug back, redrill, alter casing, etc., must be presented on Sundry Notices and Report of Wells form for approval by agent prior to commencement of work.
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12. All work must be done in conformity with the regulations of the Oil & Gas Conservation Commission of the State of Montana, as contained in "General Rules and Regulations," and amendments thereto, as well as regulations prescribed in lieu thereof.

orm No. 2
GENERAL RULES
201, 202, 213,
216, 219, 233.1

(SUBMIT IN QUADRUPLICATE)
TO
OIL AND GAS CONSERVATION COMMISSION
OF THE STATE OF MONTANA
BILLINGS OR SHELBY

NOTICE! THIS FORM BECOMES A PERMIT WHEN STAMPED APPROVED BY AN AGENT OF THE COMMISSION.

RECEIVED
MAR 14 1960
OIL AND GAS CONSERVATION COMMISSION
OF THE STATE OF MONTANA

SUNDRY NOTICES AND REPORT OF WELLS

Notice of Intention to Drill		Subsequent Report of Water Shut-off	
Notice of Intention to Change Plans		Subsequent Report of Shooting, Acidizing, Cementing	
Notice of Intention to Test Water Shut-off		Subsequent Report of Altering Casing	
Notice of Intention to Redrill or Repair Well		Subsequent Report of Redrilling or Repair	
Notice of Intention to Shoot, Acidize, or Cement		Subsequent Report of Abandonment	
Notice of Intention to Pull or Alter Casing		Supplementary Well History	
Notice of Intention to Abandon Well	XX	Report of Fracturing	

(Indicate Above by Check Mark Nature of Report, Notice, or Other Data)

March 2, 1960

Following is a {notice of intention to do work / ~~report of work done~~} on land {~~applied for~~ / leased} described as follows:

LEASE BLM-A-029305-A

MONTANA (State) Roosevelt (County) East Poplar (Field)

Well No. 63 SW NE, Section 27 (m. sec.) 28N (Township) 51E (Range) M.P.M. (Meridian)

The well is located 1980 ft. from {N / ~~S~~} line and 1980 ft. from {E / ~~W~~} line of Sec. 27

(Locate accurately on Plat on back of this form the well location, and show lease boundary.)

The elevation of the derrick floor above the sea level is 2162 KB

READ CAREFULLY — DETAILS OF PLAN OF WORK — READ CAREFULLY

(State names of and expected depths to objective sands; show size, weights, and lengths of proposed casings; indicate mudding jobs, cementing points, and all other important proposed work, particularly all details results Shooting, Acidizing, Fracturing.)

DETAILS OF WORK
RESULT

See attached sheet.

RECEIVED
MAR 11 1960
OIL AND GAS CONSERVATION COMMISSION
OF THE STATE OF MONTANA • BILLINGS

Approved subject to conditions on reverse of form 3-7-60

Date 3-11-60

By [signature] Title District Office Agent

Company MURPHY CORPORATION

By [signature]

Title Field Production Superintendent

Address Poplar, Montana

NOTE:—Reports on this Form to be submitted to the District Agent for Approval in Quadruplicate.

WHEN USED AS PERMIT TO DRILL, THIS EXPIRES 90 DAYS FROM DATE OF APPROVAL

OVER

Locate well by footage measurement from legal subdivision line, lease or property line and nearest drilling or producible well, if any.

Form No. 2
File at
Billings
or Shelby

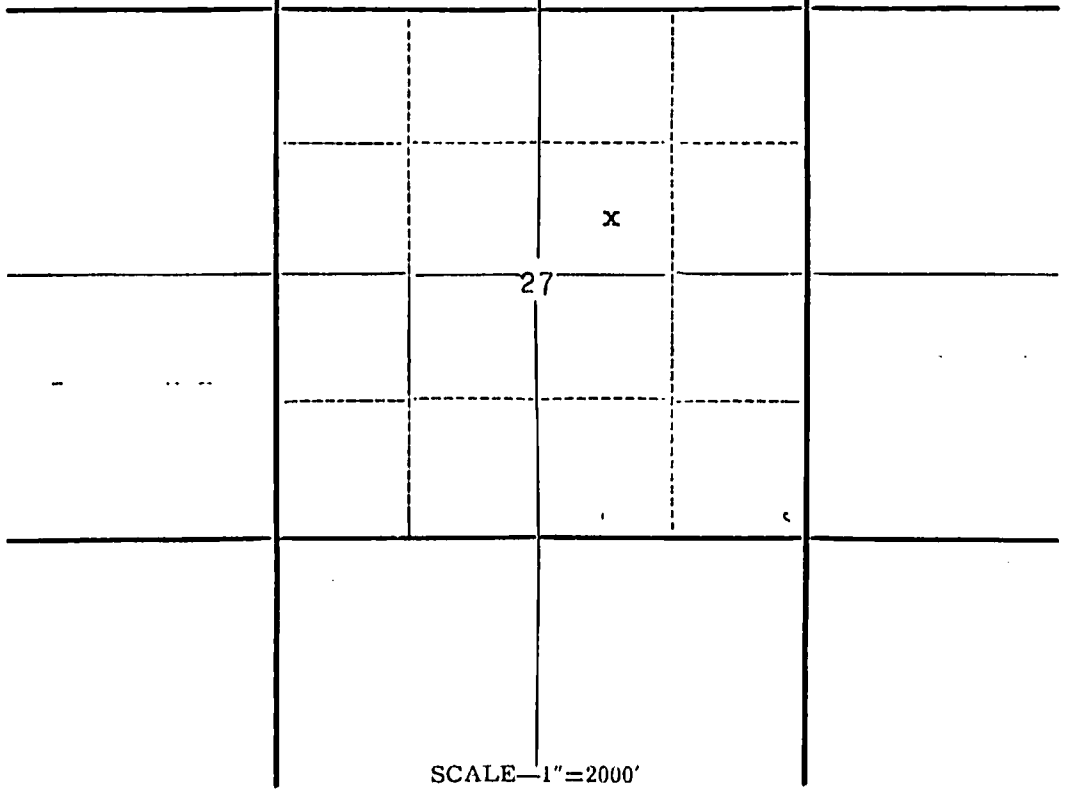
Rge.....51E.....

Form No.
File at
Billings
or Shelby

Locate
Well
Correctly

Locate
Lease
Boundary

Twp.....28N.....



SCALE—1"=2000'

THE NOTICE OF INTENTION TO DRILL THIS WELL IS APPROVED SUBJECT TO THE FOLLOWING CONDITIONS:

1. Any person, before commencing the drilling of any oil or gas well, shall secure from the commission a drilling permit and shall pay to the commission therefor for the following amounts: for each well whose estimated depth is thirty-five hundred (3500) feet or less, twenty-five dollars ($25.00); from thirty-five hundred and one (3501) feet to seven thousand (7000) feet, seventy-five dollars ($75.00); seven thousand (7000) feet and deeper, one hundred fifty dollars ($150.00).
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10. All producing wells must be marked with name of the operator, number of the well, and location, using reasonable precautions to preserve these markings at all times.
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12. All work must be done in conformity with the regulations of the Oil & Gas Conservation Commission of the State of Montana, as contained in "General Rules and Regulations," and amendments thereto, as well as regulations prescribed in lieu thereof.

DETAILS OF WORK

EPU #63 -

Hole to be loaded with 10-10.2# mud. Kibbey Sandstone perforations (5231'-43') to be plugged with a 25 sack plug (222'). Top and bottom of 9 5/8" to be plugged.

This well was completed in the Kibbey Sandstone on February 8, 1956, through perforations 5231'-43'. Initial potential was 54 BOPD, no water, flowing. The flowing life was short and after pumping equipment was installed, the production declined rapidly. Production increased after a stimuli with a small shot of acid and a sand-oil frac, but again decreased rapidly down to 11 BOPD, 92% water, at which time the well was temporarily abandoned.

Attempts were made to complete in the following intervals before being completed in the Kibbey Sand:

"C" Zone	5875-5885
"A" Zone	5570-5575
Kibbey Lime	5354-5360.

There are no other known possible producing intervals.

RECEIVED
MAR 14 1960
OIL AND GAS CONSERVATION COMMISSION
OF THE STATE OF MONTANA

Form No. 2
GENERAL RULES
201, 202, 213,
210, 219, 233.1

(SUBMIT IN QUADRUPLICATE)
TO

OIL AND GAS CONSERVATION COMMISSION OF THE STATE OF MONTANA
BILLINGS OR SHELBY

NOTICE!
THIS FORM BECOMES A PERMIT WHEN STAMPED APPROVED BY AN AGENT OF THE COMMISSION.

RECEIVED
JUL 15 1960
OIL AND GAS CONSERVATION COMMISSION OF THE STATE OF MONTANA

SUNDRY NOTICES AND REPORT OF WELLS

Notice of Intention to Drill		Subsequent Report of Water Shut-off	
Notice of Intention to Change Plans		Subsequent Report of Shooting, Acidizing, Cementing	
Notice of Intention to Test Water Shut-off		Subsequent Report of Altering Casing	
Notice of Intention to Redrill or Repair Well		Subsequent Report of Redrilling or Repair	
Notice of Intention to Shoot, Acidize, or Cement	XX	Subsequent Report of Abandonment	
Notice of Intention to Pull or Alter Casing		Supplementary Well History	
Notice of Intention to Abandon Well		Report of Fracturing	

(Indicate Above by Check Mark Nature of Report, Notice, or Other Data)

July 8, 1960, 19......

Following is a {notice of intention to do work / ~~report of work done~~} on land {~~xxownedxx~~ / leased} described as follows:

LEASE BLM-A-029305A

MONTANA (State) Roosevelt (County) East Poplar (Field)

Well No. 63 SW NE Section 27 (m. sec.) 28N (Township) 51E (Range) M.P.M. (Meridian)

The well is located 1980 ft. from {N / ~~xxSxx~~} line and 1980 ft. from {E / ~~xxWxx~~} line of Sec. 27

(Locate accurately on Plat on back of this form the well location, and show lease boundary.)

The elevation of the derrick floor above the sea level is......

READ CAREFULLY — DETAILS OF PLAN OF WORK — READ CAREFULLY

(State names of and expected depths to objective sands; show size, weights, and lengths of proposed casings; indicate mudding jobs, cementing points, and all other important proposed work, particularly all details results Shooting, Acidizing, Fracturing.)

DETAILS OF WORK
RESULT

Drill out packer, 5345' and 5553'. Perforate the "B" Zone, 5788'-5894'; Acidize and test with retrievable packer.

RECEIVED
JUL 11 1960
OIL AND GAS CONSERVATION COMMISSION OF THE STATE OF MONTANA - BILLINGS

U.S.G.S. approved 7-11-60
Approved subject to conditions on reverse of form
Date 7-12-60
By [signature] Supt Title
District Office Agent

Company MURPHY CORPORATION
By [signature]
Title Field Production Superintendent
Address Poplar, Montana

NOTE:—Reports on this Form to be submitted to the District Agent for Approval in Quadruplicate.

WHEN USED AS PERMIT TO DRILL, THIS EXPIRES 90 DAYS FROM DATE OF APPROVAL

OVER

Locate well by footage measurement from legal subdivision line, lease or property line and nearest drilling or producible well, if any.

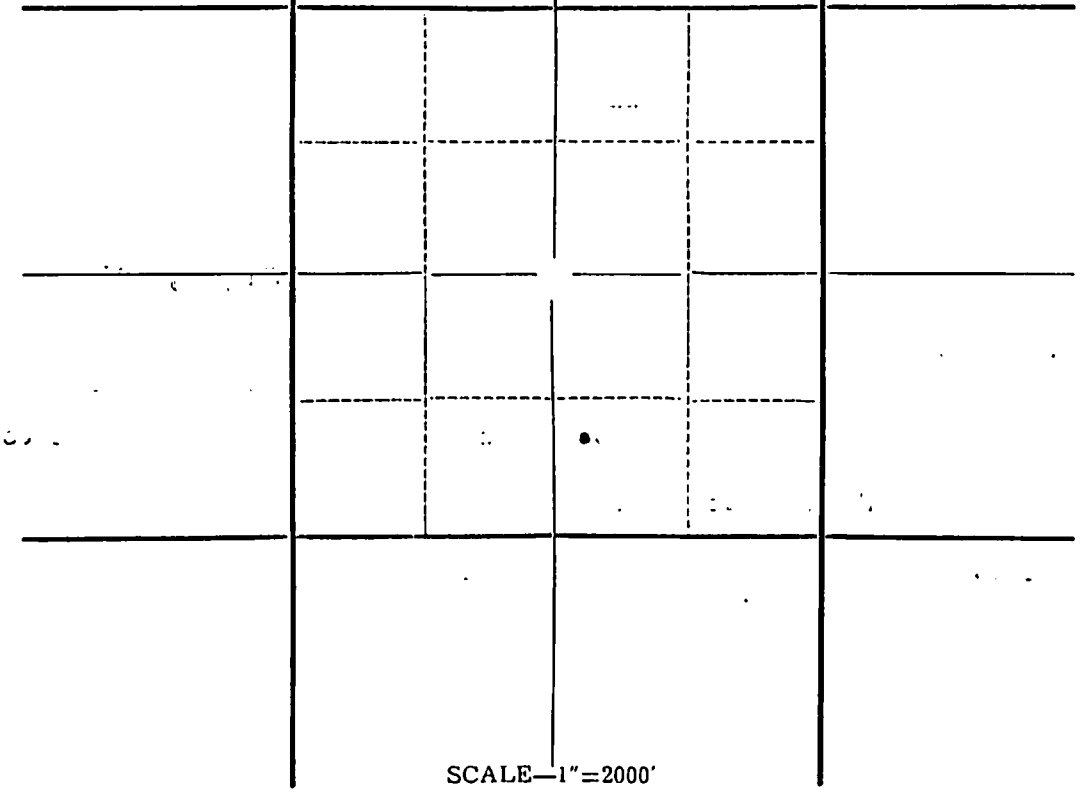
Form No. 2
File at
Billings
or Shelby

Rge.....

Form No. 2
File at
Billings
or Shelby

Locate
Well
Correctly

Twp.....



Locate
Lease
Boundary

SCALE—1"=2000'

THE NOTICE OF INTENTION TO DRILL THIS WELL IS APPROVED SUBJECT TO THE FOLLOWING CONDITIONS:

1. Any person, before commencing the drilling of any oil or gas well, shall secure from the commission a drilling permit and shall pay to the commission therefor for the following amounts: for each well whose estimated depth is thirty-five hundred (3500) feet or less, twenty-five dollars ($25.00); from thirty-five hundred and one (3501) feet to seven thousand (7000) feet, seventy-five dollars ($75.00); seven thousand (7000) feet and deeper, one hundred fifty dollars ($150.00).
2. No well is to be spudded in unless the proper surety drilling bond has been posted and approved by the Oil and Gas Conservation Commission of the State of Montana.
3. Cable tool operators must construct an adequate sump to contain all mud and water bailed from the hole.
4. Surface or conductor casing must be properly cemented by an approved method to act as a tie in case an unexpected flow of oil, gas, or water should be encountered, unless special permission has been granted for formation shut-off.
5. Any contemplated change in status of a well such as to plug and abandon, deepen, plug back, redrill, alter casing, etc., must be presented on Sundry Notices and Report of Wells form for approval by agent prior to commencement of work.
6. All substantial showings of oil or gas must be tested for commercial possibilities before drilling ahead. Each such showing must be adequately protected by casing, mud or cement, as drilling progresses.
7. The production string must be cemented unless a formation shut-off or packer is approved by the agent. Sufficient cement must be used to protect the casing and possible productive formation exposed in the process of drilling not otherwise protected.
8. All production strings of casing must be tested by bailing or pressure to determine if there is a tight bond with the formation or possible leaks in the casing. The results of the test must be reported on Sundry Notices and Report of Wells form, said report to include the size, weight, thread and length of casing, amount of cement used, and date work is done. If test shows failure, the defect must be corrected before any drilling operations are resumed.
9. A satisfactory drilling record must be kept for each tour, showing top and thickness of each and all formations drilled and all other information of value, one copy of which is to be kept at the rig while drilling is in progress for examination when an agent visits the well.
10. All producing wells must be marked with name of the operator, number of the well, and location, using reasonable precautions to preserve these markings at all times.
11. Copies of all directional surveys, electrical logs, or tops from electrical log if electric survey is run, formation tests, and cementing record, as furnished by the cementing company, etc., must be filed with the State Inspector of the district together with four copies of the log, upon completion of the well.
12. All work must be done in conformity with the regulations of the Oil & Gas Conservation Commission of the State of Montana, as contained in "General Rules and Regulations," and amendments thereto, as well as regulations prescribed in lieu thereof.

Form No. 2

GENERAL RULES
201, 202, 213,
216, 219, 233.1

(SUBMIT IN QUADRUPLICATE)

TO

OIL AND GAS CONSERVATION COMMISSION
OF THE STATE OF MONTANA
BILLINGS OR SHELBY

NOTICE!
THIS FORM BECOMES A PERMIT WHEN STAMPED APPROVED BY AN AGENT OF THE COMMISSION.

RECEIVED
SEP 11 1962
OIL AND GAS CONSERVATION COMMISSION OF THE STATE OF MONTANA

SUNDRY NOTICES AND REPORT OF WELLS

Notice of Intention to Drill		Subsequent Report of Water Shut-off	
Notice of Intention to Change Plans		Subsequent Report of Shooting, Acidizing, Cementing	
Notice of Intention to Test Water Shut-off		Subsequent Report of Altering Casing	
Notice of Intention to Redrill or Repair Well		Subsequent Report of Redrilling or Repair	
Notice of Intention to Shoot, Acidize, or Cement		Subsequent Report of Abandonment	XX
Notice of Intention to Pull or Alter Casing		Supplementary Well History	
Notice of Intention to Abandon Well		Report of Fracturing	

(Indicate Above by Check Mark Nature of Report, Notice, or Other Data)

August 10, 1962

Following is a { ~~notice of intention to do work~~ / report of work done } on land { ~~owned~~ / leased } described as follows:

LEASE BIM-A-029305-A

MONTANA (State) Roosevelt (County) Montana (Field)

Well No. 63 SW NE Section 27 (m. sec.) 28N (Township) 51E (Range) M.P.M. (Meridian)

The well is located 1980 ft. from { N / ~~S~~ } line and 1980 ft. from { E / ~~W~~ } line of Sec. 27

(Locate accurately on Plat on back of this form the well location, and show lease boundary.)

The elevation of the derrick floor above the sea level is 2162' K.B.

RECEIVED

READ CAREFULLY — DETAILS OF PLAN OF WORK — READ CAREFULLY

(State names of and expected depths to objective sands; show size, weights, and lengths of proposed casings; indicate mudding jobs, cementing points, and all other important proposed work, particularly all details results Shooting, Acidizing, Fracturing.)

DETAILS OF WORK
RESULT

5-18-62
MI & RU plg unit. Picked up 2 jts of 2 3/8" tbg & tagged btm at 5848'. Disp oil and Sw 10.2 to 10.4# w/mud. Plgd perfs (B-4 - 5783-93', B-5 5809-27' and Kibbey Sand stone 5231-43') as follows:
Plug #1 5783-5575' w/ 25 sacks.
Plug #2 5231-5021' w/25 sacks.
Cut and pld 3964' of 5 1/2" Cond. 2 csg. Set 25 sack cmt plug at 3964' on top of 5 1/2" csg. stub. Plgd btm of 9 5/8" surface csg. w/25 sk. plg. Set 10 sk cmt plg at top of surface csg and cmtd in a 4" steel post marker in accordance w/the regulations of the Montana Oil and Gas Conservation Commission and United States Geological Survey.

U.S.G.S. approved 9/20/62

Approved subject to conditions on reverse of form

Date Sept 10, 1962

By C M Watkins
Title
District Office Agent

Company Murphy Corporation

By M H Jones

Title Field Production Supt.

Address Poplar, Montana

NOTE:—Reports on this Form to be submitted to the District Agent for Approval in Quadruplicate.

WHEN USED AS PERMIT TO DRILL, THIS EXPIRES 90 DAYS FROM DATE OF APPROVAL

OVER

Locate well by footage measurement from legal subdivision line, lease or property line and nearest drilling or producible well, if any.

Form No. 2
File at
Billings
or Shelby

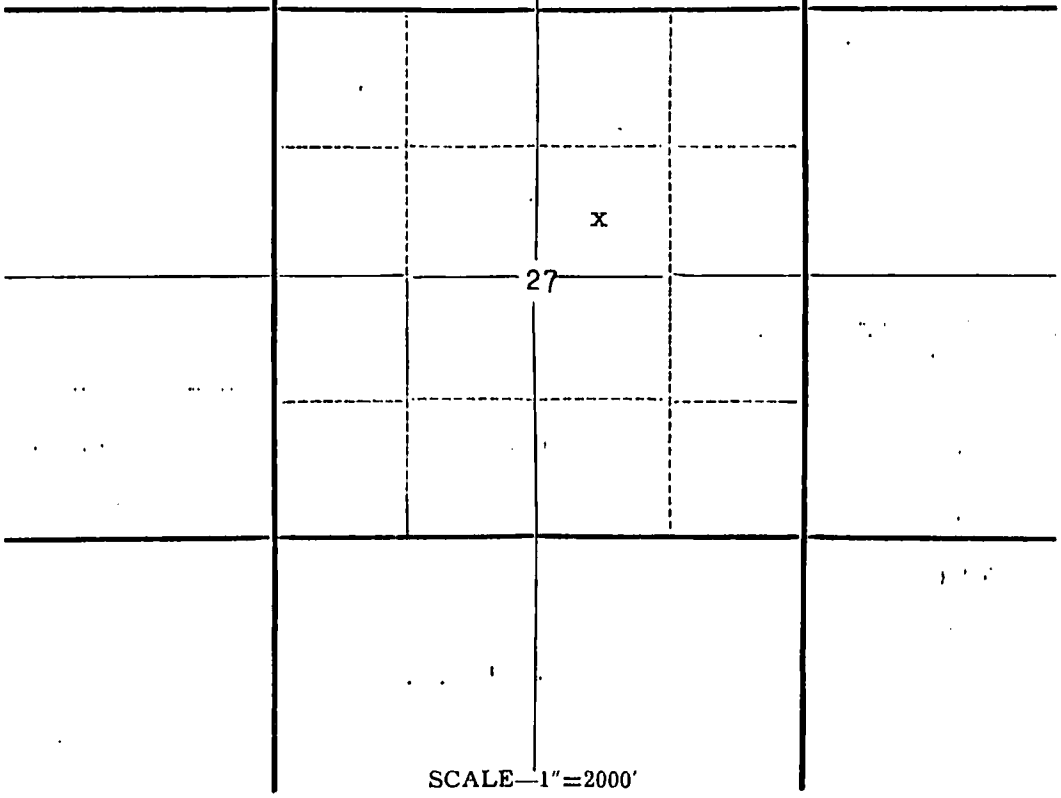
Rge. 51E

Form No. 2
File at
Billings
or Shelby

Locate
Well
Correctly

Locate
Lease
Boundary

Twp. 28N



SCALE—1"=2000'

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1. Any person, before commencing the drilling of any oil or gas well, shall secure from the commission a drilling permit and shall pay to the commission therefor for the following amounts: for each well whose estimated depth is thirty-five hundred (3500) feet or less, twenty-five dollars ($25.00); from thirty-five hundred and one (3501) feet to seven thousand (7000) feet, seventy-five dollars ($75.00); seven thousand (7000) feet and deeper, one hundred fifty dollars ($150.00).
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10. All producing wells must be marked with name of the operator, number of the well, and location, using reasonable precautions to preserve these markings at all times.
11. Copies of all directional surveys, electrical logs, or tops from electrical log if electric survey is run, formation tests, and cementing record, as furnished by the cementing company, etc., must be filed with the State Inspector of the district together with four copies of the log, upon completion of the well.
12. All work must be done in conformity with the regulations of the Oil & Gas Conservation Commission of the State of Montana, as contained in "General Rules and Regulations," and amendments thereto, as well as regulations prescribed in lieu thereof.

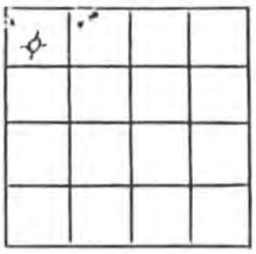
AMARCO 1-27

4

C NW NW

085-21080

LOCATE WELL CORRECTLY



Form No. 4
(Rule 206.3 & 231)

(SUBMIT IN TRIPLICATE)
TO
OIL AND GAS CONSERVATION COMMISSION
OF THE STATE OF MONTANA
BILLINGS OR SHELBY

LOG OF WELL

Company Amarco Resources Corporation Lease U.S.A. (Schmidt) Well No. 1-27

Address 611 Midland Bank Building, Billings, Montana 59101 Field (or Area) East Poplar

The well is located 660 ft. from ~~(S)~~ (N) line and 660 ft. from ~~(E)~~ (W) line of Sec. 27

Sec. 27 ; T. 28N ; R. 51E ; County Roosevelt ; Elevation 2077' Ground
(D.F., R.B. or G.L.)

Commenced drilling June 20, 1973, 19__; Completed July 4, 19 73

The information given herewith is a complete and correct record of the well. The summary on this page is for the condition of the well at the above date.

Completed as a Dry Hole
(oil well, gas well, dry hole)

Signed Robert D. Snyder

Title Petroleum Engineer

Date August 15, 1973

IMPORTANT ZONES OF POROSITY

(denote oil by O, gas by G, water by W; state formation if known)

From 4900' to 4947' (Tyler Sand) W w/sh O From ____ to ____
From 5808' to 5826' (Chas. C) W & O From ____ to ____
From ____ to ____ From ____ to ____
From ____ to ____ From ____ to ____

CASING RECORD

Size Casing	Weight Per Ft.	Grade	Thread	Casing Set	From	To	Sacks of Cement	Cut and Pulled from
13-3/8	41#	OSC-3 RR	8rd	124'	10'	134'	210	
8-5/8	24#	OSC- 3J	8 rd	992'	10'	1002'	400	

TUBING RECORD

Size Tubing	Weight Per Ft.	Grade	Thread	Amount	Perforations

COMPLETION RECORD

Rotary tools were used from -0- to 5852'
Cable tools were used from ____ to ____
Total depth ____ ft.; Plugged back to ____ T.D.; Open hole from ____ to ____

PERFORATIONS			ACIDIZED, SHOT, SAND FRACED, CEMENTED			
Interval From	Interval To	Number and Size and Type	Interval From	Interval To	Amount of Material Used	Pressure
NONE			NONE			

(If P&A show plugs above)

INITIAL PRODUCTION

Well is producing from ____ (pool) formation.

I. P. ____ barrels of oil per ____ hours
(pumping or flowing)

____ Mcf of gas per ____ hours.
____ barrels of water per ____ hours, or ____ % W.C.

(OVER)

INITIAL PRODUCTION—(Continued)

Initial 10-day average production _____ (bbl./day) (if taken)
Pressures (if measured): Tubing _____ psi flowing; _____ psi shut-in
Casing _____ psi flowing; _____ psi shut-in
Gravity _____ ° API (corrected to 60° F.)

DRILL STEM TESTS

D.S.T. No.	From	To	Tool Open (Min.)	Shut-In	F.P.	S.I.P.	Recovery	Cushion
1	5804	5818	120	90	35-110	2947-2972	Rec. 290' fluid: 200' HO&GC DM; 15% oil & 90' of MCSW w/tr O.	==

LOGS RUN

Type	Intervals From	Intervals To	
Schlumberger Dual Laterolog	5852	1005	
Schlumberger Compensated Neutron-Formation Density Log	5853	5540	*

*Job terminated due to cable failure. Quality of density uncertain because of cable failure.

FORMATION RECORD

From	To	SAMPLE AND CORE NO. AND DESCRIPTION	Top of Formation
		Greenhorn	2368
		Muddy	2968
		Dakota Silt	3162
		Dakota Sand	3230
		Lakota Sand	3495
		Morrison Shale	3610
		Swift Sand	3620
		Vanguard	3948
		Rierdon Lime	4130
		Piper Shale	4300
		Piper Limestone	4376
		Kline	4526
		Spearfish	4634
		Amsden	4734
		Tyler Formation	4860
		Tyler Sand	4900
		Otter Shale	5006
		Kibbey	5160
		Kibbey Lime	5317
		Charles	5480
		A-1	5502
		A-2	5512
		A-3	5525
		A-4	5533
		B-1	5656
		B-2	5673
		B-3	5692
		B-4	5724
		C-1	5802
		C-2	5808
		TOTAL DEPTH	5852

FORT PECK TRIBES

Assiniboine & Sioux

February 15, 1989

ENVIRONMENTAL
PROTECTION AGENCY

NOV 5 1998

MONTANA OFFICE

Pat Roddy
Bureau of Land Management
Miles City District Office
P.O. Box 940
Miles City, Montana 59301-0940

Dear Mr. Roddy:

This letter is a follow-up to our telephone conversation on February 14, 1989. In November of 1988, Mr. Tim Trottier, an enrolled member, brought a sample of water in to the Tribal Environmental Protection Office. He was complaining about the salt taste of his water and the increased costs of his conditioning system. Mr. Trottier lives in a Housing and Urban Development House on a scattered site. This site is located in NW¼NW¼NW¼NW¼ Sec. 27, T28N, R51E. This site falls just south of the East Poplar Unit. Indian Health Service conducted a routine water analysis for Mr. Trottier. A routine water analysis was also conducted at the time the house was completed. I have included both of those reports for your files.

The two water analysis tests point out some very alarming facts. Chloride levels in the home well increased from 85 mg/l in 1985 to 5210 mg/l in 1988. The total dissolved solids increased from 2930 mg/l in 1985 to 11,200 mg/l in 1988. This office feels that there may be a salt water disposal problem which is permeating Mr. Trottier's well. This well has a depth of 68 feet.

Any help or direction you could give us in this matter would be greatly appreciated. If I can be of further help, please contact me at my office at 768-5155 EXT 2399 or at the mailing address of Fort Peck Tribes, P.O. Box 1027, Poplar, Montana 59255. Once again, thank you for your time and effort in this matter.

Sincerely,

Debi Madison

Debi Madison
Environmental Engineer

DDM/lc
Enclosures

BILLINGS AREA INDIAN HEALTH SERVICE
P. L. 86-121

W E L L L O G

Reservation Fort Peck

Well Owner: Kenneth Trottier Home No.: 11
Location: NW¼ NW¼ NW¼ NW¼ Sec. 27, T28N, R51E
Drilled By: Reservation drilling Date: 5-8-85
Project No.: Mt. 9-26 Contract No.: 10

Depth:			Description of Formation:
0	to	3	top soil
3	to	27	yellow clay
27	to	52	clay till
52	to	68	gravel
	to		
	to		
	to		
	to		
	to		
	to		

SIZES AND MATERIALS USED

All Depths Measured from Top Surface of Well Slab

Top Casing Line: Nominal I.D. 5 Material Steel A-53-B
Depth Cased 0 ft. to 63 ft. Wt/ft 15 Lb. ft.
Any Reduced Casing Sizes: NA

Grout Envelope: Thickness 4 in.
Depth Grouted 10 ft. to 21 ft.
Pitless Adapter: Make _____ Model _____
Depth of Discharge _____ ft. CAP Type _____
Well Screen: Make Johnson Model Stainless Steel
Type 304
Diameter 5 in. Length 5 ft. Slot 30 in.
Depth Screened 63 ft. to 68 ft. Slot 30 in.
_____ ft. to _____ ft. Slot _____ in.
Spacer(s) _____
Fitting at Top _____
Fitting at Bottom _____
Packer Description _____
Gravel or Sand Pack: Material _____
Thickness _____ in. Depth _____ ft. to _____ f
(Attach Gradation Curve)

Total Depth to Bottom of Well 68 ft.
Total Depth to Bottom of Casing 63 ft.
Total Depth to Bottom of Drop Pipe _____ ft.
Total Depth to Pump Inlet _____ ft.

STATE, B /
AMARCO /
BLM
BLM, Miles City

ENTERED IWR
CM

Ky 52

Form 9-331
(May 1963)

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

SUBMIT IN TRIPLICATE* (Other instructions on reverse side)

Form approved.
Budget Bureau No. 42-R1424.

5. LEASE DESIGNATION AND SERIAL NO.: ~~BLM-A (M) 029305-A~~

6. IF INDIAN, ALLOTTEE OR TRIBE NAME: 14-20-0256-4047

SUNDRY NOTICES AND REPORTS ON WELLS

(Do not use this form for proposals to drill or to deepen or plug back to a different reservoir. Use "APPLICATION FOR PERMIT—" for such proposals.)

RECEIVED
JUL 11 1973
Billings, Montana
Geological Survey

1. OIL WELL ☐ GAS WELL ☐ OTHER

7. UNIT AGREEMENT NAME:

2. NAME OF OPERATOR: AMARCO RESOURCES CORPORATION

8. FARM OR LEASE NAME: USA (Schmidt)

3. ADDRESS OF OPERATOR: 611 Midland Bank Building, Billings, Montana 59101

9. WELL NO.: 1-27

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements.* See also space 17 below.) At surface: 660' FNL, 660' FWL Section 27 Twp. 28 North, Rge. 51 East

10. FIELD AND POOL, OR WILDCAT: East Poplar

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA: Sec. 27-28N-51E

C NW NW

14. PERMIT NO.

15. ELEVATIONS (Show whether DF, RT, GR, etc.): 2088' K.B.

12. COUNTY OR PARISH: Roosevelt

13. STATE: Montana

16. Check Appropriate Box To Indicate Nature of Notice, Report, or Other Data

NOTICE OF INTENTION TO:				SUBSEQUENT REPORT OF:			
TEST WATER SHUT-OFF	☐	PULL OR ALTER CASING	☐	WATER SHUT-OFF	☐	REPAIRING WELL	☐
FRACTURE TREAT	☐	MULTIPLE COMPLETE	☐	FRACTURE TREATMENT	☐	ALTERING CASING	☐
SHOOT OR ACIDIZE	☐	ABANDON*	X	SHOOTING OR ACIDIZING	☐	ABANDONMENT*	X
REPAIR WELL	☐	CHANGE PLANS	☐	(Other)			
(Other)				(NOTE: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)			

17. DESCRIBE PROPOSED OR COMPLETED OPERATIONS (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)*

Verbal permission to plug and abandon obtained July 3, 1973 from Virgil L. Paull, District Engineer, Billings, Montana, to be plugged as follows:

1st Plug	5730-5630'	30 sax cement
2nd Plug	5250-5150'	30 " "
3rd Plug	4825-4725'	30 " "
4th Plug	3600-3500'	30 " "
5th Plug	2420-2320'	30 " "
6th Plug	Top 8-5/8'	10 " "
	Surf. Casing w/Dry Hole Marker	

13-3/8" OD Casing at 134' with 210 sax cement.
8-5/8" OD Casing at 1002' with 600 sax cement.

Proprietary / Confidential Information
U. S. Gov't Use Only

18. I hereby certify that the foregoing is true and correct

SIGNED Robert D Snyder TITLE Petroleum Engineer DATE July 9, 1973

(This space for Federal or State office use)

APPROVED BY James K Mules TITLE ADM-MINERALS DATE DEC 19 1984

CONDITIONS OF APPROVAL, IF ANY:

NOB 12/19/84

*See Instructions on Reverse Side

ORIGINAL FORWARDED TO CASPER

Form 9-330
(Rev. 5-63)

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

SUBMIT IN DUPLICATE* (See other instructions on reverse side)

Form approved.
Budget Bureau No. 42-R355.5.

WELL COMPLETION OR RECOMPLETION REPORT AND LOG*

5. LEASE DESIGNATION AND SERIAL NO.: BLM-A (M) 029305-A

6. IF INDIAN, ALLOTTEE OR TRIBE NAME:

1a. TYPE OF WELL: OIL WELL ☐ GAS WELL ☐ DRY ☒ Other

U. S. GEOLOGICAL SURVEY RECEIVED JUL 31 1973

b. TYPE OF COMPLETION: NEW WELL ☒ WORK OVER ☐ DEEP-EN ☐ PLUG BACK ☐ DIFF. RESVR. ☐ Other

7. UNIT AGREEMENT NAME:

8. FARM OR LEASE NAME: USA (Schmidt)

2. NAME OF OPERATOR: Amarco Resources Corporation

9. WELL NO.: 1-27

3. ADDRESS OF OPERATOR: 611 Midland Bank Building, Billings, Montana 59101 — Billings, Montana

10. FIELD AND POOL, OR WILDCAT: East Poplar

4. LOCATION OF WELL (*Report location clearly and in accordance with any State requirements*)*
At surface 660' South of North Line & 660' East of West Line Sec. 27, Twp. 28 North, Rge. 51 East.
At top prod. interval reported below
At total depth Same as above. C NW NW

11. SEC., T., R., M., OR BLOCK AND SURVEY OR AREA: Sec. 27-28N-51E

14. PERMIT NO.	DATE ISSUED	12. COUNTY OR PARISH	13. STATE
	May 24, 1973	Roosevelt	Montana

15. DATE SPUDDED	16. DATE T.D. REACHED	17. DATE COMPL. (*Ready to prod.*)	18. ELEVATIONS (DF, RKB, RT, GR, ETC.)*	19. ELEV. CASINGHEAD
6-20-73	7-3-73	7-4-73	2088' RKB	2077'

20. TOTAL DEPTH, MD & TVD	21. PLUG, BACK T.D., MD & TVD	22. IF MULTIPLE COMPL., HOW MANY*	23. INTERVALS DRILLED BY	ROTARY TOOLS	CABLE TOOLS
5850'			→	0-5850'	

24. PRODUCING INTERVAL(S), OF THIS COMPLETION—TOP, BOTTOM, NAME (MD AND TVD)*

25. WAS DIRECTIONAL SURVEY MADE: No

26. TYPE ELECTRIC AND OTHER LOGS RUN: Schlumberger Dual Laterolog

27. WAS WELL CORED: No

28. CASING RECORD (*Report all strings set in well*)

CASING SIZE	WEIGHT, LB./FT.	DEPTH SET (MD)	HOLE SIZE	CEMENTING RECORD	AMOUNT PULLED
13-3/8"	41#	134'	15"	200 sacks cement	None
8-5/8"	24#	1002'	12-1/4"	600 sacks cement	None

29. LINER RECORD

SIZE	TOP (MD)	BOTTOM	SACKS CEMENT*	SCREEN (MD)

30. TUBING RECORD

SIZE	DEPTH SET (MD)	PACKER SET (MD)

U.S. GEOLOGICAL SURVEY RECEIVED AUG 1 1973 CASPER, WYOMING

31. PERFORATION RECORD (*Interval, size and number*)

32. ACID, SHOT, FRACTURE, CEMENT SQUEEZE, ETC.

DEPTH INTERVAL (MD)	AMOUNT AND KIND OF MATERIAL USED

33.* PRODUCTION

DATE FIRST PRODUCTION	PRODUCTION METHOD (*Flowing, gas lift, pumping—size and type of pump*)	WELL STATUS (*Producing or shut-in*)

DATE OF TEST	HOURS TESTED	CHOKE SIZE	PROD'N. FOR TEST PERIOD →	OIL—BBL.	GAS—MCF.	WATER—BBL.	GAS-OIL RATIO

FLOW. TUBING PRESS.	CASING PRESSURE	CALCULATED 24-HOUR RATE →	OIL—BBL.	GAS—MCF.	WATER—BBL.	OIL GRAVITY-API (CORR.)

34. DISPOSITION OF GAS (*Sold, used for fuel, vented, etc.*) —

TEST WITNESSED BY

35. LIST OF ATTACHMENTS
Well Report with Sample Descriptions, Dual Laterolog & Drill Stem Test Report.

36. I hereby certify that the foregoing and attached information is complete and correct as determined from all available records

SIGNED Robert D. Gaydos TITLE Petroleum Engineer DATE July 13, 1973

*(See Instructions and Spaces for Additional Data on Reverse Side)

COPY RETAINED DISTRICT OFFICE

Form No. 2

GENERAL RULES
201, 202, 213,
216, 219, 233.1

(SUBMIT IN QUADRUPLICATE)

TO

OIL AND GAS CONSERVATION COMMISSION
OF THE STATE OF MONTANA
BILLINGS OR SHELBY

7-4-73 - O.K

NOTICE
THIS FORM BECOMES A PERMIT WHEN STAMPED APPROVED BY AN AGENT OF THE COMMISSION.

SUNDRY NOTICES AND REPORT OF WELLS

Notice of Intention to Drill		Subsequent Report of Water Shut-off	
Notice of Intention to Change Plans		Subsequent Report of Shooting, Acidizing, Cementing	
Notice of Intention to Test Water Shut-off		Subsequent Report of Altering Casing	
Notice of Intention to Redrill or Repair Well		Subsequent Report of Redrilling or Repair	
Notice of Intention to Shoot, Acidize, or Cement		Subsequent Report of Abandonment	X
Notice of Intention to Pull or Alter Casing		Supplementary Well History	
Notice of Intention to Abandon Well		Report of Fracturing	

(Indicate Above by Check Mark Nature of Report, Notice, or Other Data)

August 15, 1973

Following is a {~~notice of intention to do work~~ / report of work done} on land {~~owned~~ / leased} described as follows:

LEASE U.S.A. (Schmidt) ✓

MONTANA (State) Roosevelt (County) Poplar (Field)

Well No. 1-27 NW¼NW¼ Sec. 27 (m. sec.) 28 North (Township) 51 East (Range) M.P.M. (Meridian)

The well is located 660' ft. from {N / ~~S~~} line and 660' ft. from {~~E~~ / W} line of Sec. 27

LOCATE ACCURATELY ON PLAT ON BACK OF THIS FORM THE WELL LOCATION, AND SHOW LEASE BOUNDARY

The elevation of the Ground above the sea level is 2077'

READ CAREFULLY — **DETAILS OF PLAN OF WORK** — READ CAREFULLY

(State names of and expected depths to objective sands; show size, weights, and lengths of proposed casings; indicate mudding jobs, cementing points, and all other important proposed work, particularly all details results Shooting, Acidizing, Fracturing.)

DETAILS OF WORK
RESULT

Verbal permission to plug and abandon obtained July 3, 1973 from Virgil L. Paull, District Engineer, Billings, Montana, and was plugged as follows:

1st Plug	5730-5630'	30 sax cement
2nd Plug	5250-5150'	30 "
3rd Plug	4825-4725'	30 "
4th Plug	3600-3500'	30 "
5th Plug	2420-2320'	30 "
6th Plug	Top 8-5/8"	10 "

Surf. Csg. at 134' with Dry Hole Marker
13-3/8" OD Casing at 134' with 210 sax cement.
8-5/8" OD Casing at 1002' with 600 sax cement.

RECEIVED AUG 1973 OIL & GAS CONS. COMM. STATE OF MONT. BILLINGS

Approved subject to conditions on reverse of form

Date JUL - 2 1984

By Glorie Humphrey
District Office Agent

LOCATION INSPECTED & APPROVED

Company AMARCO RESOURCES CORPORATION

By Robert D. Snyder
ROBERT D. SNYDER

Title PETROLEUM ENGINEER

Address 611 MIDLAND BANK BUILDING
BILLINGS, MONTANA 59101

COMMISSION USE ONLY
API WELL NUMBER
25
STATE COUNTY WELL

NOTE:—Reports on this form to be submitted to the District Agent for Approval in Quadruplicate

WHEN USED AS PERMIT TO DRILL, THIS EXPIRES 00 DAYS FROM DATE OF APPROVAL.

OVER

3 REPORTER PRTG. & SUPPLY CO.

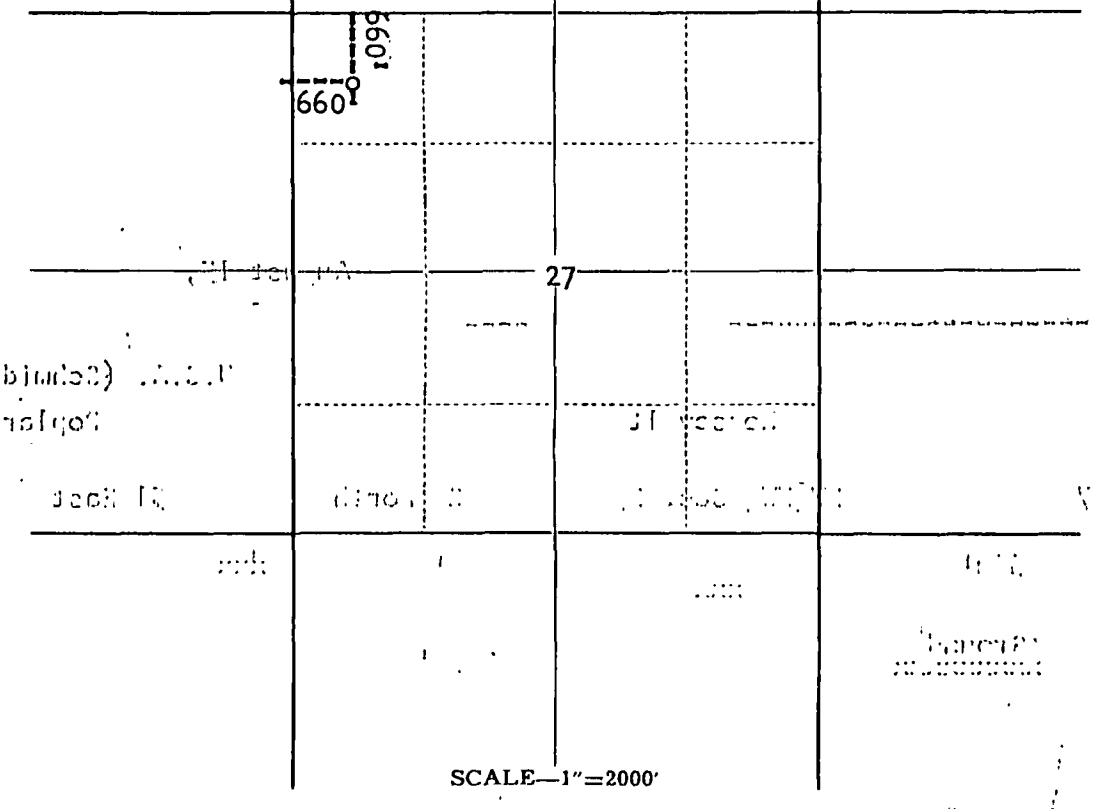
Locate well by footage measurement from legal subdivision line, lease or property line and nearest drilling or producible well, if any.

Form No. 2
File at
Billings
or Shelby

Rge. 51 E

Form No. 2
File at
Billings
or Shelby

Locate
Well
Correctly



Locate
Lease
Boundary

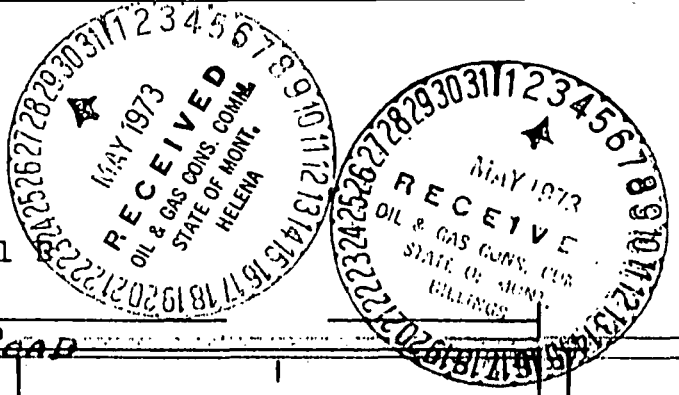
Twp. 28N

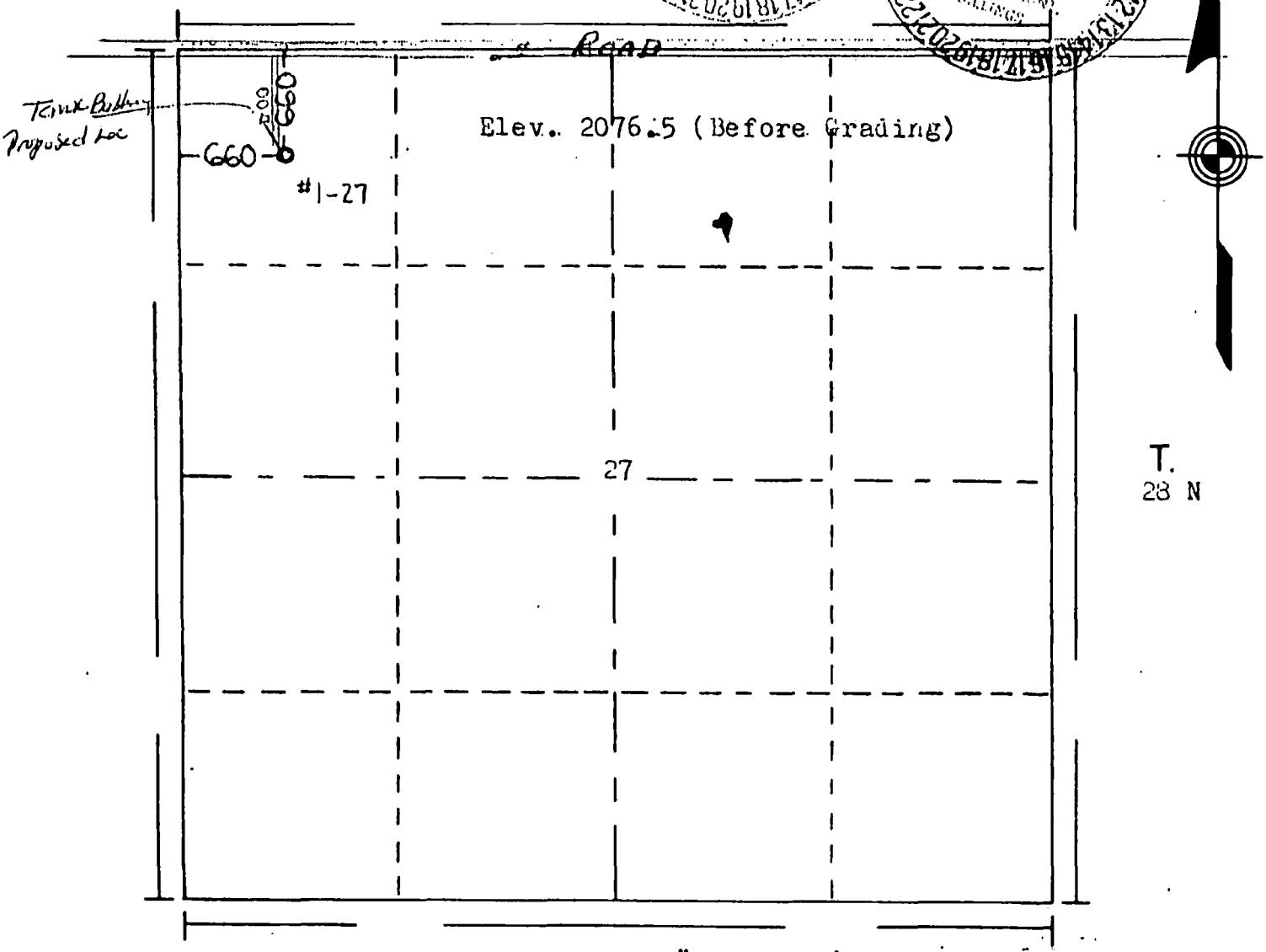
SCALE—1"=2000'

THE NOTICE OF INTENTION TO DRILL THIS WELL IS APPROVED SUBJECT TO THE FOLLOWING CONDITIONS:

1. Any person, before commencing the drilling of any oil or gas well, shall secure from the commission a drilling permit and shall pay to the commission therefor for the following amounts: for each well whose estimated depth is thirty-five hundred (3,500) feet or less, twenty-five dollars ($25.00); from thirty-five hundred and one (3,501) feet to seven thousand (7,000) feet, seventy-five dollars ($75.00); seven thousand (7,000) feet and deeper, one hundred fifty dollars ($150.00).
2. No well is to be spudded in unless the proper surety drilling bond has been posted and approved by the Oil and Gas Conservation Commission of the State of Montana.
3. Cable tool operators must construct an adequate sump to contain all mud and water bailed from the hole.
4. Surface or conductor casing must be properly cemented by an approved method to act as a tie in case an unexpected flow of oil, gas, or water should be encountered, unless special permission has been granted for formation shut-off.
5. Any contemplated change in status of a well such as to plug and abandon, deepen, plug back, redrill, alter casing, etc., must be presented on Sundry Notices and Report of Wells form for approval by agent prior to commencement of work.
6. All substantial showings of oil or gas must be tested for commercial possibilities before drilling ahead. Each such showing must be adequately protected by casing, mud or cement, as drilling progresses.
7. The production string must be cemented unless a formation shut-off or packer is approved by the agent. Sufficient cement must be used to protect the casing and possible productive formation exposed in the process of drilling not otherwise protected.
8. All production strings of casing must be tested by bailing or pressure to determine if there is a tight bond with the formation or possible leaks in the casing. The results of the test must be reported on Sundry Notices and Report of Wells form, said report to include the size, weight, thread and length of casing; amount of cement used, and date work is done. If test shows failure, the defect must be corrected before any drilling operations are resumed.
9. A satisfactory drilling record must be kept for each tour, showing top and thickness of each and all formations drilled and all other information of value, one copy of which is to be kept at the rig while drilling is in progress for examination when an agent visits the well.
10. All producing wells must be marked with name of the operator, number of the well, and location, using reasonable precautions to preserve these markings at all times.
11. Copies of all directional surveys, electrical logs, or tops from electrical log if electric survey is run, formation tests, and cementing record, as furnished by the cementing company, etc., must be filed with the State Inspector of the district together with four copies of the log, upon completion of the well.
12. All work must be done in conformity with the regulations of the Oil & Gas Conservation Commission of the State of Montana, as contained in "General Rules and Regulations," and amendments thereto, as well as regulations prescribed in lieu thereof.

FORM F-106





Scale··· 1" = 1000'

Powers Elevation Company, Inc. of Denver, Colorado
has in accordance with a request from Snyder
for Amarco Resources Corporation
determined the location of # 1 - 27 USA
to be Center - NW NW **Section** 27 **Township** 28N
Range 51E Montana Principal **Meridian**
Roosevelt **County,** Montana

I hereby certify that this plat is an accurate representation of a correct survey showing the location of
1 - 27 USA

Date: 4/27/73

Ronald F. Bastin
Licensed Land Surveyor No. 3517E
State of Montana

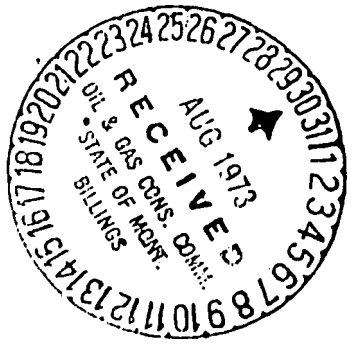
AMARCO RESOURCES CORPORATION

NO. 1-27 U.S.A. (SCHMIDT)

$NW\frac{1}{4}NW\frac{1}{4}$ SECTION 27, TWP. 28 NORTH, RGE. 51 EAST

ROOSEVELT COUNTY, MONTANA

ROBERT D. SNYDER
PETROLEUM ENGINEER
JULY 18, 1973



SUMMARY

OPERATOR:	AMARCO RESOURCES CORPORATION
OTHER INTERESTS:	HARRY J. PARKER, MURPHY OIL CORPORATION, PLACID OIL COMPANY, MUNOCO COMPANY, C. F. LUNDGREN.
NAME OF WELL:	U.S.A. (SCHMIDT) NO. 1-27.
LOCATION:	660' FNL; 660' FWL SECTION 27, TOWNSHIP 28 NORTH, RANGE 51 EAST, ROOSEVELT COUNTY, MONTANA
ELEVATION:	2077' GROUND: 2088' K.B.
TOTAL DEPTH:	5850' DRILLER: 5852' SCHLUMBERGER.
COMMENCED DRILLING:	JUNE 20, 1973 @ 1:00 A.M.
COMPLETED DRILLING:	JULY 4, 1973
DRILL STEM TESTS:	DST NO. 1, 5804-5818'; RECOVERED OIL CUT MUD AND WATER.
CORES:	NONE
LOGS:	SCHLUMBERGER DUAL LATEROLOG & COMPENSATED NEUTRON FORMATION DENSITY.
CASING:	13-3/8", 41# @ 134' WITH 210 SACKS CEMENT. 8-5/8", 24# @ 1002' WITH 600 SACKS CEMENT.
STATUS:	PLUGGED AND ABANDONED JULY 4, 1973.
SAMPLES:	MONTANA OIL & GAS COMMISSION, BILLINGS, MONTANA. AMERICAN STRATIGRAPHIC COMPANY, BILLINGS, MONTANA.

AMARCO RESOURCES CORPORATION NO. 1-27 U.S.A. (SCHMIDT)

ELECTRIC LOG TOPS

NAME OF FORMATION	DEPTH BELOW K.B.	SUBSEA DEPTH
Greenhorn	2368'	- 280'
Muddy	2968'	- 880'
Dakota Silt	3162'	-1074'
Dakota Sand	3230'	-1142'
Lakota Sand	3495'	-1407'
Morrison Shale	3610'	-1522'
Swift Sand	3620'	-1632'
Vanguard	3948'	-1860'
Rierdon Lime	4130'	-2042'
Piper Shale	4300'	-2212'
Piper Limestone	4376'	-2288'
Kline	4526'	-2438'
Spearfish	4634'	-2546'
Amsden	4734'	-2646'
Tyler Formation	4860'	-2772'
Tyler Sand	4900'	-2812'
Otter Shale	5006'	-2918'
Kibbey	5160'	-3072'
Kibbey Lime	5317'	-3229'
Charles	5480'	-3392'
A-1	5502'	-3414'
A-2	5512'	-3424'
A-3	5525'	-3437'
A-4	5533'	-3445'
B-1	5656'	-3568'

AMARCO RESOURCES CORPORATION NO. 1-27 U.S.A. (SCHMIDT)

ELECTRIC LOG TOPS CONTINUED

NAME OF FORMATION	DEPTH BELOW K.B.	SUBSEA DEPTH
B-2	5673'	-3585'
B-3	5692'	-3604'
B-4	5724'	-3636-
C-1	5802'	-3714'
C-2	5808'	-3720'
TOTAL DEPTH	5852'	-3764'

AMARCO RESOURCES CORPORATION NO. 1-27 U.S.A. (SCHMIDT)

H I S T O R Y

DATE	DEPTH FROM	DEPTH TO	FORMATION	REMARKS
4-27-73				Staked location 660' FNL & 660' FWL, Section 27, Twp. 28 North, Rge. 51 East, Roosevelt Co., Mont., by Powers Elevation Survey Company. Elevation: 2077' Ground.
5-1-73				Made application for Permit with U.S.G.S.
5-24-73				Application for Permit to Drill approved by U.S.G.S.
6-13-73				Dug pits, leveled location.
6-18-73				Moving Rotary Rig to location from North Dakota. Contractor: Cardinal Petroleum Co. Rig No. 2.
6-19-73				Rigged up rotary rig.
6-20-73	0	159	Gravel & Shale	Spudded 1:00 A.M. Drilled 15 " hole. Ran and cemented 4 jts. (124') of 13-3/8" O.D. 41# & 63# with Centralizer on bottom jt. collar with 210 sax cement, 3% CaCl, 1/4#/bbl. flocele by Dowell. Plug down @ 4:30 P.M. Deviation 1/4 deg. @ 159. W.O.C.
6-21-73	159	1015	Shale	Drilled 12-1/4" hole. Ran and cemented 31 jts. (992') of 8-5/8" O.D. 24#, New Canadian Casing, 8rd. thd. @ 1002' with 400 sax Pozmix Cement, mixed with 6% gel, 2% Ca Cl and 1/4th# flocele followed by 200 sax Reg. Cement & 3% CaCl and 1/4#/ bbl. flocele with Centralizers on bottom 3 collars and insert float valve, by Dowell. Plug down @ 12:00 P.M. Dev. 1¼ deg. @ 1015'. W.O.C.
6-22-73	1015	2438	Shale	Pressure tested casing to 1500#. Held O.K. for 30 mins. Tested BOP with pipe rams - held 1000# O.K. Drilling with salt water-gel mud.

AMARCO RESOURCES CORPORATION NO. 1-27 U.S.A. (SCHMIDT)

DATE	FROM	TO	FORMATION	REMARKS
6-23-73	2438	3574	Sand & Shale	Drilling. Bit #2. Dev. 1½ deg. @ 2868; 1½ deg. @ 3328.
6-24-73	3574	3958	Sand & Shale	Drilling with Bit #4.
6-25-73	3958	4431	Lime & Shale	Drilling with Bit #5. Dev. 2 degs. @4007. Dev. 2 degs. @ 4431.
6-26-73	4431	4700	Lime	Dev. 1-3/4 degs. @ 4431.
6-27-73	4700	4987	Sand & Shale	Dev. 1½ degs. @ 4987; M.W. 10.7#; Vis. 38.
6-28-73	4987 5180	5180 5225	Shale Sand	Mud. Wt. 10.9#; Vis. 36; W.L. 9cc.
6-29-73	5225	5408	Lime	Dev. 2 degs. @ 5300; M.W. 10.5#; Vis. 40; W.L. 4.4 cc.
6-30-73	5408	5587	Lime	Dev. 1½ degs. @ 5433; SLM 5443 = 5443. Twisted off @ 5587. 8 drill collars in hole. M.W. 10.6#; Vis. 38; W.L. 8 cc.
7-1-73	5587	5738	Lime	Recovered fish with overshot. Fan cut radiator on #2 pump motor. Drilling with 1 pump motor. M.W. 11.0; Vis. 41; W.L. 9 cc.
7-2-73	5738	5818	Lime	M.W. 11.1#; Vis. 45; W.L. 8 cc. DST No. 1 by Johnston with MFE Chamber, from 5804 to 5818. No water cushion, 15/16" bottom choke, 1/4" top choke, opened with weak blow of 15 min. preflow period, shut in tool for 30 mins., opened tool for 120 mins. main flow period with weak steady blow. Shut in tool for 90 mins. for final shut in period. Recovered 290' fluid: 200 heavy oil and gas cut drilling mud, est. 15% oil and 90' of mud cut salt water with trace of oil. BHT 219 degs. F. IHMP 3448#; IFP 32#-35#; FFP 46#-110#; ISIP 2947#; FSIP 2972#; FHMP 3424#; MFE Chamber pressure 96#; Rec. 0.05 cu. ft. gas; 120 cc oil and 1700 cc muddy salt water in chamber. Pressures indicate good test.

AMARCO RESOURCES CORPORATION NO. 1-27 U.S.A. (SCHMIDT)

DATE	FROM	TO	FORMATION	REMARKS
7-3-73	5818	5850	Lime	Drilled to total depth at 5:15 a.m. SLM 5850 = 5850. Ran Schlumberger Dual Laterolog from 5852 to 1005. Ran Schlumberger Compensated Neutron-Formation Density Log from 5853 to 5540. Job terminated due to cable failure. Quality of density uncertain because of cable failure.
7-4-73	Total Depth 5850.			Plugged and abandoned. Plug #1 30 sax 5730-5630. Plug #2 30 sax 5250-5150. Plug #3 30 sax 4825-4725. Plug #4 30 sax 3600-3500. Plug #5 30 sax 2420-2320. Plug #6 10 sax Top of Surf. Casg. with Dry Hole Marker.

AMARCO RESOURCES CORPORATION NO. 1-27 U.S.A. (SCHMIDT)

BIT RECORD

NO.	SIZE	MAKE	TYPE	HOURS	FOOTAGE
A	12-1/4"	HTC	OSC-3 RR	6½	149'
1-A	15"	HTC	OSC-3 RR	2	149'
2B	12-1/4"	HTC	OSC-3 RR	9¼	881'
1	7-7/8"	HTC	OSC-3J	15 3/4	1853'
2	7-7/8"	Reed	YT-3	5½	460'
3	7-7/8"	HTC	OSC1G-J	13½	290'
4	7-7/8"	HTC	CIC-J	15	389'
5	7-7/8"	HTC	CIC	15	424'
6	7-7/8"	HTC	J-33	41½	556'
7	7-7/8"	Sec.	S4T-J	11½	209'
8	7-7/8"	Reed	Y-21	7 3/4	104'
9	7-7/8"	Reed	Y-21	13	143'
10	7-7/8"	HTC	OW-4	13	149'
11	7-7/8"	Sec.	M-4-N	19½	151'
12	7-7/8"	Sec.	M-4-N	6 3/4	80'
13	7-7/8"	Sec.	M-4-N RR	3	32'

MUD RECORD

DESCRIPTION	UNITS USED
Bringel	56
Gel	38
Myca	5
Cotton Hulls	5
Super Visbestos	4
Bar	325
Desco	23
Loid	199
Fiber	1
Soda Ash	2
Detomer	3
Perservative	5
Sodium Chromide	2

Total cost of mud estimated to be $5,228.00

AMARCO RESOURCES CORPORATION NO. 1-27 U.S.A. (SCHMIDT)
C NWNW 27-28N-51E

SAMPLE DESCRIPTIONS
(NOT LAGGED)

DEPTH FROM	TO	DESCRIPTION
30	120	Gravel and sand, coarse grained.
120	750	Shale, dark gray.
750	810	Sand, med. to fine grained, loose, good porosity & permeability, no show.
810	870	Shale, dark gray.
870	930	Sandstone, med. grained, white, angular, good porosity, good permeability, no show.
930	1620	Shale, dark gray.
1620	1680	Shale, gray, calcareous, with streak limestone, tan.
1680	1800	Shale, gray, calcareous, and siltstone, light gray, hard.
1800	1950	Shale, light gray, with streaks siltstone and limestone.
1950	2010	Shale, gray.
2010	2040	Shale, gray with streak limestone, tan.
2040	2250	Shale, dark gray with white specks, calcareous (lst specks.)
2250	2310	Shale, gray.
2310	2340	Shale, gray with white specks, calcareous.
2340	2370	Shale, gray with streaks glauconitic siltstone.
2370	2580	Shale, dark gray.
2580	2670	Shale, dark gray with streaks shale, red.
2670	3180	Shale, dark gray.
3180	3240	Shale, dark gray, with siltstone, light gray.
3240	3330	Sandstone, med. grained, rounded, white, good porosity and permeability, no show.
3330	3390	Siltstone, light gray.
3390	3450	Sandstone, med. to coarse grained, rounded, white, good porosity and permeability, no show.

AMARCO RESOURCES CORPORATION NO. 1-27 U.S.A. (SCHMIDT)

SAMPLE DESCRIPTIONS CONTINUED

DEPTH FROM	TO	DESCRIPTION
3450	3480	Sandstone, med. to coarse grained, rounded, white,; good porosity and permeability, no show, plus shale, reddish brown.
3480	3570	Sandstone, coarse grained, angular, hard, white, good porosity and permeability, no show.
3570	3630	Shale, dark gray.
3630	3720	Sandstone, fine grained, soft, galuconitic, silty, good porosity and permeability, no show.
3720	3780	As above, plus shale, red.
3780	3930	Shale, silty, light gray and shale, red.
3930	3990	Shale, light gray.
3990	4010	Sandstone, fine grained, silty, gray, hard, fair porosity, fair permeability, no show.
4010	4020	Shale, light gray, with bentonite.
4020	4040	Sandstone, fine grained, hard, silty, angular, gray, fair porosity and permeability, no show.
4040	4050	Siltstone, light gray and shale, light gray.
4050	4060	Shale, light gray, bentonitic.
4060	4130	As above, with streak siltstone, light gray.
4130	4230	Shale, as above, with limestone, gray.
4230	4260	Shale, gray to dark gray, silty.
4260	4290	Siltstone, light gray and shale, greenish.
4290	4310	Shale, gray and greenish and limestone, light tan.
4310	4330	Shale, as above and shale, red.
4330	4350	Shale, red.
4350	4370	Limestone, gray to light tan and shale, red.
4370	4380	Shale, red.

AMARCO RESOURCES CORPORATION NO. 1-27 U.S.A. (SCHMIDT)

SAMPLE DESCRIPTIONS CONTINUED

DEPTH FROM	TO	DESCRIPTION
4380	4420	Limestone, light gray to light tan, dense with calcite filled fractures.
4420	4460	Limestone, as above, plus siltstone, light gray.
4460	4470	Shale, red.
4470	4500	Shale, red, with streak siltstone, light gray to green and limestone, light tan.
4500	4560	Limestone, light tan to gray, dense.
4560	4600	Shale, red, and limestone, light tan.
4600	4690	Shale, red, and gypsum.
4690	4720	Shale, red, and gypsum with streak limestone, gray and white.
4720	4740	Shale, red.
4740	4750	Shale, red, and dolomite, white.
4750	4760	Shale, red, silty.
4760	4790	Dolomite, white, hard, dense, with shale, red, silty, no show.
4790	4800	Limestone, white, dense.
4800	4810	Limestone, white, light tan, hard, dense, and reddish in part.
4810	4820	Shale, red, sandy and limestone, white.
4820	4830	Limestone, white and shale, red, silty, hard.
4830	4840	Shale, red, silty.
4840	4870	Limestone, white and shale, red, silty and siltstone, red, hard.
4870	4890	Shale, red, silty with loose sand grains and streak gilsonite.

AMARCO RESOURCES CORPORATION NO. 1-27 U.S.A. (SCHMIDT)

SAMPLE DESCRIPTIONS CONTINUED

DEPTH FROM	TO	DESCRIPTION
4890	4910	Sandstone, fine to med. grained, rounded, red, calcareous, hard, poor to fair porosity, yellow fluor., no cut, no show.
4910	4940	Sandstone, fine to med. grained, angular, red, calcareous, hard, fair to good porosity, part has yellow fluor. and good cut. Appears to be streaked oil saturation or show from top 10 feet.
4940	4950	Sandstone as above with decreasing show of oil.
4950	4990	Sandstone as above with white sandstone which includes pieces of pale yellow-green shale in sand.
4990	5000	Sandstone as above with more white sandstone.
5000	5030	Shale, green, red and sandstone as above.
5030	5040	Shale as above with streak of dolomite, light cream, dense.
5040	5050	Dolomite, light cream, and shale, green and red.
5050	5060	Limestone, white and shale, black and red.
5060	5070	Shale, dark gray, with streaks limestone, dolomitic, white.
5070	5080	Limestone, dolomitic, hard, dense, white.
5080	5100	Dolomite, white and limestone, dolomitic, and shale, red and dark gray.
5100	5110	Shale, dark gray, red and green, and dolomite, as above.
5110	5120	Limestone, dolomitic, dark gray and shale, red and green.
5120	5130	Shale, speckled greenish-gray, dolomite and shale, red.
5130	5160	Shale, dark gray and red, siltstone, light gray, dolomite, white.
5160	5180	Sandstone, fine grained, angular, white, silicious, poor to no porosity, no show.
5180	5200	Siltstone, red, hard and sandstone, as above, no show.

AMARCO RESOURCES CORPORATION NO. 1-27 U.S.A. (SCHMIDT)

SAMPLE DESCRIPTIONS CONTINUED

DEPTH FROM	TO	DESCRIPTION
5200	5240	Sandstone, fine grained, angular, hard, dense with shale, red, green, gray and brown, poor to no porosity, no show.
5240	5330	Shale, red, silty, with sandstone as above, and limestone, light tan.
5330	5350	Limestone, light tan, and siltstone, pink.
5350	5380	Shale, red, silty with streak siltstone and limestone.
5380	5450	Shale, red, pink, green and gray with limestone, light tan.
5450	5460	Limestone and dolomite, light tan to gray.
5460	5490	Dolomite, light gray and limestone, dark gray and shale, red with gypsum.
5490	5500	Dolomite and limestone, as above, and gilsonite.
5500	5525	Limestone, dark gray, fractures, very fine grained, intergranular porosity, few pieces of oolitic limestone, well cemented, no show.
5525	5530	Dolomite, light gray and limestone, dark gray, yellow fluor., no cut, red shale and white gypsum. (Show appears to be from the oil in the mud.)
5530	5550	Limestone, dark gray and dolomite, light gray, yellow fluor., no cut.
5550	5575	Limestone, dark gray with oolitic limestone, well cemented, scattered throughout, no apparent show of oil.
5575	5595	Limestone, dark gray and dolomite.
5595	5610	Anhydrite, white, and limestone, dark gray, shale, red with gypsum.
5610	5620	Dolomite, light tan, brown, fluor. yellow, no cut.
5620	5635	Anhydrite and gypsum, limestone and dolomite, few scattered pieces have fluor. and cut.
5635	5645	Dolomite and limestone, light tan to dark gray.
5645	5665	Anydrite, dappled, plus dolomite and limestone as above.

AMARCO RESOURCES CORPORATION NO. 1-27 U.S.A. (SCHMIDT)

SAMPLE DESCRIPTIONS CONTINUED

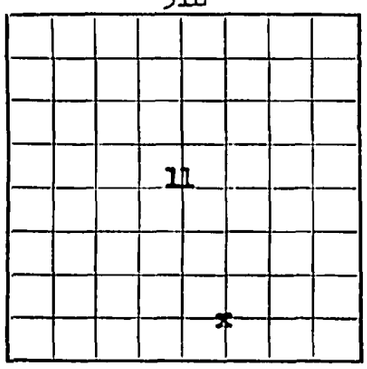
FROM	TO	DESCRIPTION
5665	5700	Limestone and dolomite, light gray to dark gray, with gilsonite in some fractures.
5700	5815	Dolomite, light tan and limestone, dark gray with shale, red and gray. All samples have fluor, and cut from oil in mud (?).
5815	5818	Dolomite and limestone as above.
5818		Circulated 15 mins. Dolomite and limestone as above. Circulated 30 mins. Dolomite and limestone as above. Circulated 45 mins. Dolomite and limestone as above. Circulated 60 mins. Dolomite and limestone as above. Dolomite has yellow fluor. and good cut.
5818	5850	Dolomite and limestone, light tan to dark gray.
	5850	TOTAL DEPTH.

P.1 #34

Budget Bureau No. 42-R-358.3.
Approval expires 12-31-60.

Form 9-330

51E



LOCATE WELL CORRECTLY

U. S. LAND OFFICE Billings
SERIAL NUMBER BLM A 029305 A
LEASE OR PERMIT TO PROSPECT 6035

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

LOG OF OIL OR GAS WELL

Company Murphy Corporation Address Poplar, Montana

Lessor or Tract Fed. BIM-A-029305-A Field East Poplar Unit State Montana

Well No. 100 Sec. 11 T. 28N R. 51E Meridian M.P.M. County Roosevelt

Location 660 ft. {N. / XXX} of S. Line and 1989 ft. {XXX / W.} of E. Line of Sec. 11 Elevation 2215 RKB
(Derrick floor relative to sea level)

The information given herewith is a complete and correct record of the well and all work done thereon so far as can be determined from all available records.

Signed M. H. James

Date August 9, 1957 Title Field Production Supt.

The summary on this page is for the condition of the well at above date.

Commenced drilling June 29, 19 57 Finished drilling July 23, 19 57

OIL OR GAS SANDS OR ZONES

(*Denote gas by G*)

No. 1, from 5805 to 5817 Oil No. 4, from ..... to .....

No. 2, from ..... to ..... No. 5, from ..... to .....

No. 3, from ..... to ..... No. 6, from ..... to .....

IMPORTANT WATER SANDS

No. 1, from ..... to ..... No. 3, from ..... to .....

No. 2, from ..... to ..... No. 4, from ..... to .....

CASING RECORD

Size casing	Weight per foot	Threads per inch	Make	Amount	Kind of shoe	Cut and pulled from	Perforated		Purpose
9 5/8	32.30	8 rd.	Amer	1025.32	Howco Float				Surface
5 1/2	15.50	8 rd.	Amer	5915.00	Howco Automatic Fillup		5805	5817	Oil String

MUDDING AND CEMENTING RECORD

Size casing	Where set	Number sacks of cement	Method used	Mud gravity	Amount of mud used
9 5/8	1036.32	400	Pump & Plug		
5 1/2	5925.00	300	Pump & Plug		

PLUGS AND ADAPTERS

Heaving plug—Material ..... Length ..... Depth set .....

Adapters—Material ..... Size .....

SHOOTING RECORD

Size	Shell used	Explosive used	Quantity	Date	Depth shot	Depth cleaned out
		See Attached Sheets				

TOOLS USED

Rotary tools were used from 0 feet to 5926 feet, and from ..... feet to ..... feet

Cable tools were used from ..... feet to ..... feet, and from ..... feet to ..... feet

DATES

L.P. August 7, 1957 Put to producing July 23, 19 57

The production for the first 24 hours was 700 barrels of fluid of which 12 % was oil; ..... % emulsion; 88 % water; and ..... % sediment. Gravity, °Bé. 40.2 @ 60°

If gas well, cu. ft. per 24 hours ..... Gallons gasoline per 1,000 cu. ft. of gas .....

Rock pressure, lbs. per sq. in. .....

FOLD | MARK

Form 9-331
(May 1963)

ENVIRONMENTAL PROTECTION AGENCY

NOV 5 1998

MONTANA OFFICE

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

SUBMIT IN TRIPLICATE* (Other instructions on reverse side)

Form approved.
Budget Bureau No. 42-R1424.

5. LEASE DESIGNATION AND SERIAL NO.: BLM-A-029305A

6. IF INDIAN, ALLOTTEE OR TRIBE NAME:

SUNDRY NOTICES AND REPORTS ON WELLS

(Do not use this form for proposals to drill or to deepen or plug back to a different reservoir. Use "APPLICATION FOR PERMIT—" for such proposals.)

U.S. Geological Survey
RECEIVED
JUN 28 1973
Billings, Montana

1. OIL WELL [X] GAS WELL [ ] OTHER

7. UNIT AGREEMENT NAME: East Poplar Unit

2. NAME OF OPERATOR: Murphy Oil Corporation

8. FARM OR LEASE NAME: East Poplar Unit

3. ADDRESS OF OPERATOR: P.O. Box 547, Poplar, Montana 59255

9. WELL NO.: No. 100

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements.* See also space 17 below.) At surface

660' from the South line and 1989' from the East line

10. FIELD AND POOL, OR WILDCAT: East Poplar Unit

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA: SW SE Section 11, T28N, R51E

14. PERMIT NO.

15. ELEVATIONS (Show whether DF, RT, GR, etc.): 2203' G.L.

12. COUNTY OR PARISH: Roosevelt

13. STATE: Montana

16. Check Appropriate Box To Indicate Nature of Notice, Report, or Other Data

NOTICE OF INTENTION TO:				SUBSEQUENT REPORT OF:			
TEST WATER SHUT-OFF	[ ]	PULL OR ALTER CASING	[ ]	WATER SHUT-OFF	[ ]	REPAIRING WELL	[ ]
FRACTURE TREAT	[ ]	MULTIPLE COMPLETE	[ ]	FRACTURE TREATMENT	[ ]	ALTERING CASING	[ ]
SHOOT OR ACIDIZE	[ ]	ABANDON*	[ ]	SHOOTING OR ACIDIZING	[X]	ABANDONMENT*	[ ]
REPAIR WELL	[ ]	CHANGE PLANS	[ ]	(Other)			
(Other)				(NOTE: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)			

17. DESCRIBE PROPOSED OR COMPLETED OPERATIONS (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.) *

Filled annulus with salt water and pressured to 2000 PSI. Filled tubing and established injection rate of 1/4 BPM at 1000 PSI. Released packer, spotted acid, set packer and acidized the B-1 Zone perforations with 2000 gallons 28% HCL with inhibitor, demulsifer and iron seq. agent added. Over flushed acid with 50 bbls. salt water.

Maximum Rate	1/2 BPM	Minimum Rate	1/4 BPM	Average Rate	1/2 BPM
Maximum PSI	1400#	Minimum PSI	900#	Average PSI	1000#

U.S. GEOLOGICAL SURVEY
RECEIVED
JUL 5 1973
CASPER, WYOMING

18. I hereby certify that the foregoing is true and correct

SIGNED W. B. Barrow TITLE District Superintendent DATE June 25, 1973

(This space for Federal or State office use)

APPROVED BY Virgil L. Pauli TITLE DISTRICT ENGINEER DATE 7-3-73

CONDITIONS OF APPROVAL, IF ANY:

*See Instructions on Reverse Side

Form 9-331
(May 1963)

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

SUBMIT IN TRIPLICATE* (Other instructions on reverse side)

Form approved.
Budget Bureau No. 42-R1424.

SUNDRY NOTICES AND REPORTS ON WELLS

(Do not use this form for proposals to drill or to deepen or plug back to a different reservoir. Use "APPLICATION FOR PERMIT—" for such proposals.)

RECEIVED
MAY 10 1973
Billings, Monta.a

5. LEASE DESIGNATION AND SERIAL NO.: BLM A-029305A

6. IF INDIAN, ALLOTTEE OR TRIBE NAME: [redacted]

1. OIL WELL [X] GAS WELL [ ] OTHER

7. UNIT AGREEMENT NAME: East Poplar Unit

2. NAME OF OPERATOR: Murphy Oil Corporation

8. FARM OR LEASE NAME: East Poplar Unit

3. ADDRESS OF OPERATOR: P.O. Box 547, Poplar, Montana 59255

9. WELL NO.: No. 100

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements.* See also space 17 below.) At surface

660' from the South line and 1989' from the East line
C SWSE

10. FIELD AND POOL, OR WILDCAT: East Poplar Unit

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA: SW SE Section 11, T28N, R51E

14. PERMIT NO.

15. ELEVATIONS (Show whether DF, RT, GR, etc.): 2203' G.L.

12. COUNTY OR PARISH: Roosevelt

13. STATE: Montana

16. Check Appropriate Box To Indicate Nature of Notice, Report, or Other Data

NOTICE OF INTENTION TO:				SUBSEQUENT REPORT OF:			
TEST WATER SHUT-OFF		PULL OR ALTER CASING		WATER SHUT-OFF		REPAIRING WELL	
FRACTURE TREAT		MULTIPLE COMPLETE		FRACTURE TREATMENT		ALTERING CASING	
SHOOT OR ACIDIZE	X	ABANDON*		SHOOTING OR ACIDIZING		ABANDONMENT*	
REPAIR WELL		CHANGE PLANS					
(Other)				(Other)			

(NOTE: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)

17. DESCRIBE PROPOSED OR COMPLETED OPERATIONS (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)*

It is proposed to acidize this well with 2,000 gallons of retarded 28% HCL acid and overflush with 50 bbls. of lease crude.

This well is pumping at the rate of 60 BFPD 29 BOPD 31 BWPD 52% W.C.. Fluid should be doubled and oil production should be increased by approximately 20 BO.

U. S. GEOLOGICAL SURVEY
RECEIVED
MAY 15 1973
CASPER, WYOMING

18. I hereby certify that the foregoing is true and correct

SIGNED W E Brown TITLE District Superintendent DATE May 7, 1973

(This space for Federal or State office use)

APPROVED BY Virgil R. Parks TITLE DISTRICT ENGINEER DATE 5-14-73
CONDITIONS OF APPROVAL, IF ANY:

*See Instructions on Reverse Side

COPY RETAINED DISTRICT OFFICE

Budget Bureau No. 42-R359.4.
Approval expires 12-31-60.

Form 9-331 b
(April 1952)

(SUBMIT IN TRIPLICATE)

Indian Agency _____

U. S. GEOLOGICAL SURVEY
RECEIVED
JUL 29 1963
GEOLOGICAL SURVEY
MONTANA

UNITED STATES
DEPARTMENT OF THE INTERIOR

~~XXXXX~~ BLM*A (M) -

Lease No. -029305A

SUNDRY NOTICES AND REPORTS ON WELLS

NOTICE OF INTENTION TO DRILL		SUBSEQUENT REPORT OF WATER SHUT-OFF	
NOTICE OF INTENTION TO CHANGE PLANS		SUBSEQUENT REPORT OF SHOOTING OR ACIDIZING	
NOTICE OF INTENTION TO TEST WATER SHUT-OFF		SUBSEQUENT REPORT OF ALTERING CASING	
NOTICE OF INTENTION TO REDRILL OR REPAIR WELL		SUBSEQUENT REPORT OF REDRILLING OR REPAIR	
NOTICE OF INTENTION TO SHOOT OR ACIDIZE		SUBSEQUENT REPORT OF ABANDONMENT	
NOTICE OF INTENTION TO PULL OR ALTER CASING		SUPPLEMENTARY WELL HISTORY	
NOTICE OF INTENTION TO ABANDON WELL		Repair casing Leak	xx

(INDICATE ABOVE BY CHECK MARK NATURE OF REPORT, NOTICE, OR OTHER DATA)

July 26, , 19 63

Well No. 100 is located 660 ft. from {N/S} line and 1989 ft. from {E/W} line of sec. 11

SW SE Section 11 (¼ Sec. and Sec. No.) | 28N (Twp.) | 51E (Range) | MPM (Meridian)

East Poplar (Field) | Roosevelt (County or Subdivision) | Montana (State or Territory)

The elevation of the derrick floor above sea level is 2203 ft.

COPY RETAINED DISTRICT OFFICE

DETAILS OF WORK

(State names of and expected depths to objective sands; show sizes, weights, and lengths of proposed casings; indicate mudding jobs, cementing points, and all other important proposed work)

The work done reported July 5, 1963 was premature. The casing patch collasped and required swedging out and cement squeezing to repair.
Squeeze job #1 with 75 sacks, would not squeeze. Squeeze job #2 with 50 sacks, held 3000 PSI for 30 minutes ok.
Put back on production July 18, 1963.
Tested July 24, 1963 at the rate of 79 BFPD, 20% water, (63 BOPD, 16 BWPD).

U. S. GEOLOGICAL SURVEY
RECEIVED
AUG 8 1963
CASPER, WYOMING

Approved AUG 6 1963
Richard A. Smith
ACTING District Engineer

I understand that this plan of work must receive approval in writing by the Geological Survey before operations may be commenced.

Company Murphy Corporation

Address Box 547

Poplar, Montana 59255

By W. A. Jones

Title Field Production Superintendent

U. S. GOVERNMENT PRINTING OFFICE 16—84376-8

Form 9-331 b
(April 1952)

Budget Bureau No. 42-R359.4.
Approval expires 12-31-60.

U. S. GEOLOGICAL SURVEY
RECEIVED
JUL 5 1963
BILLINGS, MONTANA

(SUBMIT IN TRIPLICATE)

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

~~Allotee~~ ~~Agency~~ ~~Fort Peck~~

~~Allotment~~ BLM&A (M)

Lease No. A-029305A

Ref 39

SUNDRY NOTICES AND REPORTS ON WELLS

NOTICE OF INTENTION TO DRILL	SUBSEQUENT REPORT OF WATER SHUT-OFF
NOTICE OF INTENTION TO CHANGE PLANS	SUBSEQUENT REPORT OF SHOOTING OR ACIDIZING
NOTICE OF INTENTION TO TEST WATER SHUT-OFF	SUBSEQUENT REPORT OF ALTERING CASING
NOTICE OF INTENTION TO REDRILL OR REPAIR WELL	SUBSEQUENT REPORT OF REDRILLING OR REPAIR
NOTICE OF INTENTION TO SHOOT OR ACIDIZE	SUBSEQUENT REPORT OF ABANDONMENT
NOTICE OF INTENTION TO PULL OR ALTER CASING	SUPPLEMENTARY WELL HISTORY
NOTICE OF INTENTION TO ABANDON WELL	
Notice to repair indicated csg. lk. xx	Repaired casing leak.

U. S. GEOLOGICAL SURVEY
RECEIVED
JUL 11 1963
CASPER, WYOMING

(INDICATE ABOVE BY CHECK MARK NATURE OF REPORT, NOTICE, OR OTHER DATA)

July 5, 1963

Well No. 100 is located 660 ft. from {S} line and 1989 ft. from {E} line of sec. 11

SW SE Section 11 (¼ Sec. and Sec. No.) | 28N (Twp.) | 51E (Range) | MPM (Meridian)

East Poplar Unit (Field) | Roosevelt (County or Subdivision) | Montana (State or Territory)

The elevation of the derrick floor above sea level is 2293 ft.

COPY RETAINED DISTRICT OFFICE

DETAILS OF WORK

(State names of and expected depths to objective sands; show sizes, weights, and lengths of proposed casings; indicate mudding jobs, cementing points, and all other important proposed work)

Notice of intention to do work------

To locate and repair indicated casing leak.

Report of work done----

Located and repaired 5½" casing leak at 3937' with Howco stress casing patch set from 3932'-3942'.
July 4, 1963--Pumping, no test.

Approved JUL 10 1963

Acting District Engineer

I understand that this plan of work must receive approval in writing by the Geological Survey before operations may be commenced.

Company Murphy Corporation

Address Box 547

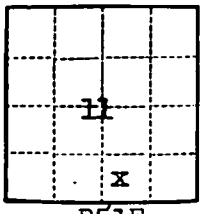
Poplar, Montana

By M. L. Jones

Title Field Production Superintendent

U. S. GOVERNMENT PRINTING OFFICE 16—84276-5

Form 9-331a
(Feb. 1951)



U. S. GEOLOGICAL SURVEY
RECEIVED
JAN 12 1959
BILLINGS, MONTANA

(SUBMIT IN TRIPLICATE)

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

Budget Bureau No. 42-R358.4.
Approval expires 12-31-60.

Land Office Denver Montana
Lease No. ~~Federal~~ BLM-A 029305-A (Lse 6035)
Unit ~~East Poplar Unit~~

Dkt No. 39

SUNDRY NOTICES AND REPORTS ON WELLS

NOTICE OF INTENTION TO DRILL		SUBSEQUENT REPORT OF WATER SHUT-OFF	
NOTICE OF INTENTION TO CHANGE PLANS		SUBSEQUENT REPORT OF SHOOTING OR ACIDIZING	
NOTICE OF INTENTION TO TEST WATER SHUT-OFF		SUBSEQUENT REPORT OF ALTERING CASING	
NOTICE OF INTENTION TO RE-DRILL OR REPAIR WELL		SUBSEQUENT REPORT OF RE-DRILLING OR REPAIR	
NOTICE OF INTENTION TO SHOOT OR ACIDIZE	XX	SUBSEQUENT REPORT OF ABANDONMENT	
NOTICE OF INTENTION TO PULL OR ALTER CASING		SUPPLEMENTARY WELL HISTORY	
NOTICE OF INTENTION TO ABANDON WELL			

(INDICATE ABOVE BY CHECK MARK NATURE OF REPORT, NOTICE, OR OTHER DATA)

January 8, 19 59

Well No. 100 is located 660 ft. from {S} line and 1989 ft. from {E} line of sec. 11

SW SE Section 11 (¼ Sec. and Sec. No.) 28N (Twp.) 51E (Range) M.P.M. (Meridian)

East Poplar (Field) Roosevelt (County or Subdivision) Montana (State or Territory)

The elevation of the derrick floor above sea level is 2215 ft.

COPY RETAINED DISTRICT OFFICE

DETAILS OF WORK

(State names of and expected depths to objective sands; show sizes, weights, and lengths of proposed casings; indicate mudding jobs, cementing points, and all other important proposed work)

Perforate "B" Zone (5742'-5750'), test for communication outside casing between "B" Zones (before and after acidizing). Acidize "B" Zone with 1000 gallons regular acid, swab test, blank off "B" Zone (5805'-5817') with DR latching plug, pump test.

Approved JAN 12 1959

District Engineer

I understand that this plan of work must receive approval in writing by the Geological Survey before operations may be commenced.

Company Murphy Corporation

Address P. O. Box 547

Poplar, Montana

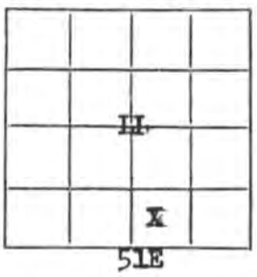
By

Title Field Production Supt.

U. S. GOVERNMENT PRINTING OFFICE: 1958 O - 463339

MURPHY 100
(EPU-100)

LOCATE WELL CORRECTLY



Form No. 4
(Gen. Rule 206.3 & 231)

(SUBMIT IN TRIPLICATE)
TO
OIL AND GAS CONSERVATION COMMISSION
OF THE STATE OF MONTANA
BILLINGS OR SHELBY

RECEIVED
AUG 20 1957
OIL AND GAS CONSERVATION COMMISSION
OF THE STATE OF MONTANA

LOG OF WELL

Company Murphy Corporation Lease Fed. BIM-A# 029305-A Well No. 100

Address Poplar, Montana Field (or Area) East Poplar Unit

The well is located 660 ft. from (S) line and 1989 ft. from (E) line of Sec. 11

Sec. 11 ; T. 28N ; R. 51E ; County Roosevelt ; Elevation 2215 RKB (D.F., R.B. or G.L.)

Commenced drilling June 29, 19 57; Completed July 23, 19 57

The information given herewith is a complete and correct record of the well. The summary on this page is for the condition of the well at the above date.

Completed as Oil Well (oil well, gas well, dry hole)

Signed M H James

Title Field Production Supt.

Date August 9, 1957

IMPORTANT ZONES OF POROSITY

(denote oil by O, gas by G, water by W; state formation if known)

From 5805 to 5817 Oil
From ____ to ____
From ____ to ____
From ____ to ____
From ____ to ____
From ____ to ____
From ____ to ____
From ____ to ____

CASING RECORD

Size Casing	Weight Per Ft.	Grade	Thread	Casing Set	From	To	Sacks of Cement	Cut and Pulled from
9 5/8"	32.30	H-40	8 rd.	1036.32			400	
5½"	15.50	J-55	8 rd.	5925.00			300	

TUBING RECORD

Size Tubing	Weight Per Ft.	Grade	Thread	Amount	Perforations
2 3/8" & 2 7/8"				@ 5802.28	

COMPLETION RECORD

Rotary tools were used from 0 to 5926
Cable tools were used from ____ to ____
Total depth 5926 ft.; Plugged back to 5865 T.D.; Open hole from ____ to ____

PERFORATIONS			ACIDIZED, SHOT, SAND FRACED, CEMENTED			
Interval From	Interval To	Number and Size and Type	Interval From	Interval To	Amount of Material Used	Pressure
5805	5817	4 j.s.p.f.	5805	5817	1000 gal. etching	1000#

(If P&A show plugs above)

INITIAL PRODUCTION

Well is producing from Madison (pool) formation.

I. P. 84 barrels of oil per 24 hours Pumping (pumping or flowing)

____ Mcf of gas per ____ hours.

616 barrels of water per 24 hours, or 88 % W.C.

RECEIVED
AUG 1 9 1957
OIL AND GAS CONSERVATION COMMISSION
OF THE STATE OF MONTANA - BILLINGS

(OVER)

10M--1-56

INITIAL PRODUCTION—(Continued)

Initial 10-day average production _____ (bbl./day) (if taken)
Pressures (if measured): Tubing _____ psi flowing; _____ psi shut-in
Casing _____ psi flowing; _____ psi shut-in
Gravity 40.2 @ 60 ° API (corrected to 60° F.)

DRILL STEM TESTS

D.S.T. No.	From	To	Tool Open (Min.)	Shut-In	F.P.	S.I.P.	Recovery	Cushion
				See Attached Sheets				

LOGS RUN

Type	Intervals	
	From	To
See Attached Sheets		

FORMATION RECORD

From	To	SAMPLE AND CORE NO. AND DESCRIPTION	Top of Formation
		See Attached Sheets	

SUMMARY OF WELL HISTORY

WELL NAME AND NUMBER:	East Poplar Unit Well No. 100
LOCATION:	SW SE Section 11, T28N, R51E
DRILLING UNIT:	160 Acres
WORKING INTEREST:	31.448470%
REVENUE INTEREST:	31.448470%
ELEVATION:	2203' Ground, 2215' K. B.
WELL HEAD MARKER:	RKB to Top of flange on 9 5/8" x 5 1/2" Cameron Casing Head = 10'.
DRILLING CONTRACTOR:	Zach Brooks Drilling Company
SPUDDED:	3:00 P. M., June 29, 1957
DRILLING RIG RELEASED:	6:00 P. M., July 20, 1957
COMPLETION CONTRACTOR:	Western Oil Well Service Company
COMPLETED:	July 23, 1957
TOTAL DEPTH:	5926' Schlumberger = 5925' Driller
CASING:	9 5/8" @ 1036.32 with 400 sacks cement 5 1/2" @ 5925 with 300 sacks cement
INITIAL PRODUCTION INTERVAL:	Perforated B Zone - 5805' to 5817' with Lane Wells Karat-Free Casing Jet Gun, 4 holes per foot.
TUBING:	2 3/8" and 2 7/8" at 5802.28' (L.W.)
INITIAL POTENTIAL:	Pumped 700 BFPD, 88% Water, (84 BOPD, 616 BWPD).
INITIAL ACID TREATMENT:	B- Zone 5805-5817' with 1000 gallons Dowell etching acid.
INITIAL FRAC TREATMENT:	None
PERFORATIONS:	5805-5817' B Zone

EAST POPLAR UNIT WELL NO. 100

COMPLETION DATA

CASING PROGRAM:

6-30-57: 1050' TD - Ran 32 jts. of 9 5/8" OD, H-40, ST&C, R-2, 8rd. thd., Class "T" American casing. Landed 11.00' below RKB at 1036.32'. Howco float shoe at 1036.32', 1 Howco centralizer at 1022'. Circulated 30 minutes before cementing. Cemented with 400 sacks of regular cement with 2% $CaCl_2$, 10 barrels water ahead of cement. Bumped plug with 1000#, released pressure, held ok. Full circulation while cementing. 50 sacks cement back. Plug down at 2:05 A.M., 7-1-57.

7-1-57: 1050' TD - Tested blow out preventers and 9 5/8" casing with 1000# for 30 minutes, held ok.

7-20-57: 5925' TD - Ran 139 jts. (5915') of 5 1/2", 15.50#, J-55, 8rd. thd., ST&C, R-3, Class " T" American casing. Landed 10.00' below RKB and set 1' off bottom at 5925'. Ran Howco automatic fillup shoe at 5925'. Howco baffle collar 5877'. Ran 5 B&W centralizers at 5895', 5832', 5743', 5655' and 5573'. Ran 53 B&W scratchers spaced as follows: 5928-5574', 15'; 5574-5617', 10'; 5617-5655', 5'; 5655'-5743', 10'; 5743-5847', 5'; 5847-5877', 10'; 5877-5925', 5'. Reciprocated casing 40' while circulating 30 minutes and cementing. Cemented with 300 sacks of 1.1 Pozmix with 22% NaCl. Ran 10 barrels of water ahead. Pumped plug down with water. Bumped plug at 12:23 A.M., 7-20-57 with 1400 psi. Released pressure, float held ok. Set slips. Released Zach Brooks rig #3 at 6:00 P.M., 7-20-57.

7-21-57: 5925' TD - Moving in pulling unit.

7-22-57: 5865' PBTD - Ran Lane Wells radio-activity log from 5865' to 2000' and 1100' to 600'. Perforated B Zone, 5805'-5817', with Lane Wells Kerat-Free casing jet (4 shots per foot). Set top of Baker Model "D" production packer at 5800'.

7-23-57: 5865' PBTD - Picked up tubing and spaced out. Swabbed well down to seating nipple at 3500'. Let stand 1 hour. No fluid movement. Acidized B Zone with 1000 gallons of Dowell etching acid. Spotted acid and pressured up to 2000#. Formation broke back to 1800#. Injected first 4 barrels at 2600#, 1 BPM. Formation began breaking down. Pump rate was gradually increased to a final injection rate of 3.7 BPM at 1000#. Bleed down - 400# in 2 minutes. Opened well to pit, flowed off pressure head and died. Swabbed load water and scant acid and began showing oil on 5th run. Last 30 minutes, swabbed to pit at estimated rate of 32 BFPH, 80% water. Chlorides of water - 93,000 PPM.

7-24-57: 5865' PBTD - Preparing to put on pump for testing. After shut in overnight well filled, no pressure. Swabbed well 7 hours. Last 2 hours, swab rate - 31 BFPH, 86% water (115 BOPD, 745 BWPD). Spotted 50 barrels salt water down tubing. Started out of hole.

Completion Data Continued

7-25-57: 5865' PBTD - Laid down 2-3/8" tubing and re-ran as shown in tubing record. Ran rods.

7-26-57: 5865' PBTD - preparing to set pumping unit.

7-27-57: 5865' PBTD - waiting on power.

7-28-57: 5865' PBTD - waiting on power to start pumping tests.

7-29-57: 5865' PBTD - Will test today.

7-30-57: 5865' PBTD - On a 4 hour test, pumped at the rate of 708 BFPD, 88% water (85 BOPD, 623 BWPD).

7-31-57: 5865' PBTD - On a 24 hour test, pumped at rate of 697 BFPD, 88% water (84 BOPD, 613 BWPD).

8-1-57: 5865' PBTD - Pumping, no test.

8-2-57: 5865' PBTD - 4 hour test, pumping rate 675 BFPD, 86% water, (581 BWPD, 94 BOPD).

8-3-57: 5865' PBTD - Pumping, no test.

8-4-57: 5865' PBTD - Pumping, no test.

8-5-57: 5865' PBTD - 3 hour test, pumped at rate of 693 BFPD, 87% water, (603 BWPD, 90 BOPD).

8-6-57: 5865' PBTD - On 4 hour test, pumped at rate of 690 BFPD, 88% water, (607 BWPD, 83 BOPD).

8-7-57: 5865' PBTD - On 4 hour test, pumped at rate of 700 BFPD, 88% water, (616 BWPD, 84 BOPD). This is the initial potential test. To pump for 30 days to attempt to exhaust water. To drop from report.

Completion Data Continued (Tubing and Rod Record)

Tubing Record:

8.50'	Below RKB
30.78'	Top joint 2-7/8" EUE, 8rd. thd., 6.50#, J-55, Class 1
2.10'	2-7/8" tubing sub
2984.97'	96 joints 2-7/8" EUE, 8rd. thd., 6.50#, J-55, Class 1
1.25'	2-7/8" EUE, 8rd. thd., seating nipple
30.28'	1 joint, 2-7/8", 8rd. thd., 6.50#, J-55, Class 1
.80'	2-7/8" x 2-3/8", EUE, 8rd. thd., swadge with 2-7/8" collar
2765.45'	89 joints 2-3/8", EUE, 8rd. thd., 4.60#, J-55, Class 2
3.65'	2-3/8" perforated tubing sub
.40'	Latch on sub
5798.20'	equals 5600' Lane Wells (top packer)
2.28'	Baker seal assembly
5800.48'	equals 5802.28' Lane Wells (Bottom tail pipe)

Rod Record:

8', 6', 4' and 2' - 7/8" scraper subs	20'
38 - 7/8" scraper rods	950'
80 - 3/4" plain rods	2000'
2 - 3/4" plain sub	

Pump: 2 1/2" x 2" x 1 1/2" x 12' x 24' Axelson volumax insert pump with 3 cup bottom hold down.

EAST POPLAR UNIT WELL NO. 100

WELL LOG DATA

Type of Log	Interval Logged	
Schlumberger Electrical Survey 5"	2000'	5922'
Schlumberger Microlog 2"	1040'	5920'
Schlumberger Microlog 5"	2000'	5865'
Lane Wells Radioactivity Log 2"	600'	5850'
Lane Wells Radioactivity Log 5"	600'	5865'

SCHLUMBERGER TOPS

Eagle	1240
Niobrara	2093
Greenhorn	2444
Graneros	2651
Muddy Sand	3003
Dakota Silt	3201
Swift	3737
Vanguard	4000
Rierdon	4278
Piper Shale	4350
Piper Limestone	4425
Gypsum Springs	4484
Spearfish	4680
Amsden	4805
Heath	4920
Otter	5100
Kibbey Sand	5236
Kibbey Limestone	5390
Madison	5478
A	5570
B	5743
C	5887

EAST POPLAR UNIT WELL NO. 100

DRILL STEM TESTS

DST #1: 5015'-5025' Ran DST #1 with Halliburton, single full hole packer, 5/8" bottom choke, no water cushion. Tool open 38 minutes, shut in 20 minutes. Tool opened with strong blow. Salt water to surface in 28 minutes, no gas. Flowed to pit 10 minutes at the rate of 3/4 BPM with rainbow of oil. IBHFP--450#, FBHFP--2180#, BHSIP--2470#, Hydro--2720#. Weight of salt water 8.8 per gallon.

DST #2: 5747'-5758' B Zone. Ran DST #2 with Halliburton, single packer, full hole, 5/8" bottom choke, no water cushion. Tool open 2 hours, shut in 30 minutes. Tool opened with good blow and remained same throughout test. Gas to surface while closing tool (2 hours). Recovered 180' clean oil, 90' muddy oil and 90' salty sulphur water. IBHFP--42#, FBHFP--205#, BHSIP--2030# (still building), Hydro--3320'.

DST #3: 5762'-5778' B Zone. Ran DST #3 with Halliburton, single full hole packer, 5/8" bottom choke, no water cushion. Tool open 2 hours, closed 30 minutes. Tool open with strong blow, continued throughout test. Gas to surface 2 hours. Recovered 630' mud-cut oil, 360' water-cut oil, and 2570' salty sulphur water. IBHFP--83#, FBHFP--1828#, BHSIP--2472#, Hydro--3320#.

DST #4: 5780'-5803' B Zone. Ran DST #4 with Halliburton, single full hole packer, no water cushion, 5/8" bottom choke. Tool opened with weak blow for 5 minutes and stopped. Tool open 2 hours, shut in 30 minutes. Recovered 40' muddy water. IBHFP--10#, FBHFP--23#, BHSIP--865#, Hydro--3345#.

DST #5: 5801.5'-5817' B Zone. Ran DST #5 with Halliburton single packer, 5/8" bottom choke, no water cushion. Tool open 2 hours, shut in 30 minutes. Tool opened with weak blow, increased to fair blow in 15 minutes, dead in 30 minutes. Recovered 90' gas-cut mud with rainbow of oil. IBHFP--20#, FBHFP--60#, BHSIP--2860#, Hydro--3380#.

Form No. 2
GENERAL RULES
201, 202, 213,
216, 219, 233.1

(SUBMIT IN QUADRUPLICATE)
TO

OIL AND GAS CONSERVATION COMMISSION
OF THE STATE OF MONTANA
BILLINGS OR SHELBY

NOTICE! THIS FORM BECOMES A PERMIT WHEN STAMPED APPROVED BY AN AGENT OF THE COMMISSION.

RECEIVED
FEB 5 - 1959
OIL AND GAS CONSERVATION COMMISSION OF THE STATE OF MONTANA

SUNDRY NOTICES AND REPORT OF WELLS

Notice of Intention to Drill		Subsequent Report of Water Shut-off	
Notice of Intention to Change Plans		Subsequent Report of Shooting, Acidizing, Cementing	
Notice of Intention to Test Water Shut-off		Subsequent Report of Altering Casing	
Notice of Intention to Redrill or Repair Well		Subsequent Report of Redrilling or Repair	
Notice of Intention to Shoot, Acidize, or Cement		Subsequent Report of Abandonment	
Notice of Intention to Pull or Alter Casing		Supplementary Well History	
Notice of Intention to Abandon Well		Report of Fracturing	
		Workover History	

(Indicate Above by Check Mark Nature of Report, Notice, or Other Data)

January 28, 1959

Following is a ~~notice of intention to do work~~ / report of work done on land ~~patented~~ / leased described as follows:

LEASE Federal BLM-A 029305-A (lse 6035)

MONTANA (State) Roosevelt (County) East Poplar (Field)

Well No. 100 SW SE Section 11 (m. sec.) 28N (Township) 51E (Range) M.P.M. (Meridian)

The well is located 660 ft. from {~~N~~ / S} line and 1989 ft. from {E / ~~W~~} line of Sec. 11

(Locate accurately on Plat on back of this form the well location, and show lease boundary.)

The elevation of the derrick floor above the sea level is 2215'

READ CAREFULLY — DETAILS OF PLAN OF WORK — READ CAREFULLY

(State names of and expected depths to objective sands; show size, weights, and lengths of proposed casings; indicate mudding jobs, cementing points, and all other important proposed work, particularly all details results Shooting, Acidizing, Fracturing.)

DETAILS OF WORK
RESULT

SEE ATTACHED SHEETS

RECEIVED
FEB 2 1959
OIL AND GAS CONSERVATION COMMISSION OF THE STATE OF MONTANA BILLINGS

U.S.G.S. approved 2-2-59
Approved subject to conditions on reverse of form

Date 2-4-59

By [signature] Title

District Office Agent

Company Murphy Corporation

By [signature]

Title Field Production Superintendent

Address Poplar, Montana

NOTE:—Reports on this Form to be submitted to the District Agent for Approval in Quadruplicate.

10M--1-56

OVER

WORKOVER HISTORY NO. 1

January 28, 1959

Lease and Well Number: East Poplar Unit Well No. 1065

Field: East Poplar County: Roosevelt State: Montana

Well Location: SW SE Section 11, T28N, R51E

Status Prior to Present Job:

Date Completed: June 23, 1957 Date of Last Workover: None T.D.: 5926'

PBTD: 5865' Producing Zone: B Zone of Madison Formation

Perforations: 5805'-5817' Cumulative Production: through December, 1958 was 26,916 BO and 252,017 BW Latest Test: November 1, 1958 -- 624 BFPD, 92% water (50 BOPD, 574 BWPD)

Justification for Workover: To increase oil production and lower water cut.

Summary of Workover:

1-15-59 PBTD 5865' - Rigged up pulling unit to recomplete in the B Zone and DR plug B Zone. Pulled rods and tubing. Ran gun in hole, unable to perforate, odometer would not work.

1-16-59 PBTD 5865' - Perforated B Zone (5742-5750') with Wireline Inc. Dyna jet casing gun, 4 h.p.f. Ran tubing with 2 sets Baker seal unities, perforation nipple and blank joint with bull plug. Stung into Baker Model "D" production packer with top seal unities and checked for communication between B and B Zone perforations. No communication. Picked tubing up until lower seal assembly was in Model "D" production packer. Spot 1000 gallons Howco regular acid down tubing and up casing above B perforations (5742-5750'). Lower tubing until upper seal assemblys were in Modal "D" packer. Acidized B Zone down casing. Displaced first 6 barrels acid at rate of 1/4 BPM at 2000#, next 8 barrels at the rate of 1/2 BPM at 2200# and last 10 barrels at the rate of 3/4 BPM at 2300#. 8 minute bleed down pressure was 2100#. (Note: B Zone and B Zone did not communicate.) Swabbed until spent acid was recovered. Shut in on account of darkness.

1-17-59 PBTD 5865' - After shut in overnight, well flowed 1/2" stream. Killed with 100 barrels salt water. Made trip with tubing. Laid down Baker double seal assembly. Ran Baker DR plug and set plug in Model "D" packer at 5800'.

Summary of Workover continued

1-18-59 PBTD 5865' - Pumping off load water, will test today.

1-19-59 PBTD 5865' - On 3 hour test, pumped at the rate of 217 BFPD, 4% water (208 BOPD, 9 BWPD), Chlorides 106,000 PPM.

1-20-59 PBTD 5865' - Down due to power failure. No test, water cut was 4%.

1-21-59 PBTD 5865' - No test, power off yesterday.

1-22-59 PBTD 5865' - On 4 hour test, pumped at the rate of 170 BFPD, 4% water (164 BOPD, 6 BWPD).

1-23-59 PBTD 5865' - On 24 hour test, pumped at the rate of 140 BFPD, 3% water (135 BOPD, 6 BWPD).

1-24-59 PBTD 5865' - On 24 hour test, pumped at the rate of 135 BFPD, 4% water (130 BOPD, 5 BWPD). This is the B Zone initial potential. To drop from report.

Recap of Workover:

1. New Perforations: 5742-5750'
2. Final PBTD: 5865'
3. Workover Potential: Pumping 135 BFPD, 4% water (130 BOPD, 5 BWPD)
4. Geologic Name of New Producing Zone: B Zone of Madison Formation

Results of Workover: Oil production increased from 50 BPD to 130 BPD and water production decreased from 574 BPD to 5 BPD. Workover Successful.

Form No. 2
GENERAL RULES
201, 202, 213,
216, 219, 233.1

(SUBMIT IN QUADRUPLICATE)
TO

NOTICE! THIS FORM BECOMES A PERMIT WHEN STAMPED APPROVED BY AN AGENT OF THE COMMISSION.

OIL AND GAS CONSERVATION COMMISSION OF THE STATE OF MONTANA
BILLINGS OR SHELBY

RECEIVED
JUL 11 1957
OIL AND GAS CONSERVATION COMMISSION OF THE STATE OF MONTANA

SUNDRY NOTICES AND REPORT OF WELLS

Notice of Intention to Drill		Subsequent Report of Water Shut-off	
Notice of Intention to Change Plans		Subsequent Report of Shooting, Acidizing, Cementing	
Notice of Intention to Test Water Shut-off		Subsequent Report of Altering Casing	
Notice of Intention to Redrill or Repair Well		Subsequent Report of Redrilling or Repair	
Notice of Intention to Shoot, Acidize, or Cement		Subsequent Report of Abandonment	
Notice of Intention to Pull or Alter Casing		Supplementary Well History	X
Notice of Intention to Abandon Well		Report of Fracturing	

(Indicate Above by Check Mark Nature of Report, Notice, or Other Data)

July 2, 1957

Following is a {notice of intention to do work / ~~report of work done~~} on land {~~owned~~ / leased} described as follows:

LEASE Federal BLM-A 029305 (lse 6035)

MONTANA (State) Roosevelt (County) East Poplar Unit (Field)

Well No. 100 SW SE Section 11 (m. sec.) 28N (Township) 51E (Range) M.P.M. (Meridian)

The well is located 660 ft. from {~~N~~ / S} South line and 1989 ft. from {E / ~~W~~} East line of Sec. 11

(Locate accurately on Plat on back of this form the well location, and show lease boundary.)

The elevation of the derrick floor above the sea level is 2215 feet

READ CAREFULLY — DETAILS OF PLAN OF WORK — READ CAREFULLY

(State names of and expected depths to objective sands; show size, weights, and lengths of proposed casings; indicate mudding jobs, cementing points, and all other important proposed work, particularly all details results Shooting, Acidizing, Fracturing.)

DETAILS OF WORK
RESULT

Spudded 3:00 P.M. 6-29-57 - Ran 32 jts. (1025.32') of 9 5/8" OD, Standc., R-2, 8rd. thd., Class 1 American casing. Landed 11.00' below RKB, Howco float shoe at 1036.32', 1 Howco cent. at 1022', circulated 30 min. before cementing. Cemented with 400 sacks regular cement with 2% CaCl, 10 barrels water ahead of cement. Bumped plug with 1000#, released pressure, held OK. Full circulation while cementing. 50 sacks cement back. Plug down 2:05 A.M., 7-1-57.

Tested BOP and 9 5/8" casing with 1000# for 30 min. Held OK.

RECEIVED JUL 8 1957
OIL AND GAS CONSERVATION COMMISSION OF THE STATE OF MONTANA - BILLINGS

Approved subject to conditions on reverse of form — U.S.G.S. approved 7-5-57

Date 7-10-57

By [signature] Title

District Office Agent

Company Murphy Corporation

By M. T. James [signature]

Title Field Production Superintendent

Address Box 447, Poplar, Montana

NOTE:—Reports on this Form to be submitted to the District Agent for Approval in Quadruplicate.

10M--1-56

OVER

MURPHY EPA C8

LOCATE WELL CORRECTLY

Form No. 4
(Gen. Rule 206.3 & 231)

(SUBMIT IN TRIPLICATE)
TO
OIL AND GAS CONSERVATION COMMISSION
OF THE STATE OF MONTANA
BILLINGS OR SHELBY

RECEIVED
DEC 22 1955
799
OIL AND GAS CONSERVATION COMMISSION
OF THE STATE OF MONTANA - BILLINGS

LOG OF WELL

Company MURPHY CORPORATION Lease #3929 (78l2) Well No. 68

Address 602 Midland National Bank Building Field (or Area) East Poplar

The well is located 2007 ft. from ~~(S)~~ (N) line and 1980 ft. from ~~(W)~~ (E) line of Sec. 11

Sec. 11 ; T. 28N ; R. 51E ; County Roosevelt ; Elevation 2213 K.B.
(D.F., R.B. or G.L.)

Commenced drilling 5:00 P.M. October 29, 1955; Completed December 14, 1955

The information given herewith is a complete and correct record of the well. The summary on this page is for the condition of the well at the above date.

Completed as Oil well
(oil well, gas well, dry hole)

Signed Harold Miller

Title Division Production Superintendent

Date December 22, 1955

IMPORTANT ZONES OF POROSITY

(denote oil by O, gas by G, water by W; state formation if known)

From 5614 to 5619 O
From ____ to ____
From ____ to ____
From ____ to ____
From ____ to ____
From ____ to ____
From ____ to ____
From ____ to ____

CASING RECORD

Size Casing	Weight Per Ft.	Grade	Thread	Casing Set	From	To	Sacks of Cement	Cut and Pulled from
9 5/8"	36#	J-55	8	1017.23'			400	
5 1/2"	15.50#	J-55	8	5960.00'			300	

TUBING RECORD

Size Tubing	Weight Per Ft.	Grade	Thread	Amount	Perforations
2 3/8"	4.70#	J-55	8	5613.73	open ended

COMPLETION RECORD

Rotary tools were used from 0 to 5961
Cable tools were used from ____ to ____
Total depth 5961 ft.; Plugged back to 5924 T.D.; Open hole from ____ to ____

PERFORATIONS			ACIDIZED, SHOT, SAND FRACED, CEMENTED			
Interval From	Interval To	Number and Size and Type	Interval From	Interval To	Amount of Material Used	Pressure
5614	5619	1/2" jet	5614	5619	500 gal etching	2100#

(If P&A show plugs above)

INITIAL PRODUCTION

Well is producing from Madison (pool) formation.

I. P. 179 barrels of oil per 24 hours flowing
(pumping or flowing)

____ Mcf of gas per ____ hours.

15 barrels of water per 24 hours, or ____ % W.C.

(OVER)

15M—5-55

INITIAL PRODUCTION—(Continued)

Initial 10-day average production _____ (bbl./day) (if taken)
Pressures (if measured): Tubing _____ psi flowing; _____ psi shut-in
Casing _____ psi flowing; _____ psi shut-in
Gravity 40.4 ° API (corrected to 60° F.)

DRILL STEM TESTS

D.S.T. No.	From	To	Tool Open (Min.)	Shut-In	F.P.	S.I.P.	Recovery	Cushion
				SEE ATTACHED SHEETS				

LOGS RUN

Type	Intervals	
	From	To
SEE ATTACHED SHEETS		

FORMATION RECORD

From	To	SAMPLE AND CORE NO. AND DESCRIPTION	Top of Formation
		SEE ATTACHED SHEETS	

WELL HISTORY

WELL NO.:	East Poplar Unit No. 68
LOCATION:	SW NE Section 11, Township 28 North, Range 51 East
ELEVATION:	2208' Ground - 2213' K.B.
CONTRACTOR:	Zach Brooks Drilling Company
SPUDDED:	5:00 P.M., October 29, 1955
COMPLETED:	December 14, 1955
TOTAL DEPTH:	5961' Schlumberger equals 5960' Driller
CASING:	9-5/8" @ 1017.23' with 400 sacks cement 5-1/2" @ 5960.00' with 300 sacks cement
TUBING:	2-3/8" @ 5613.73
PERFORATIONS:	"A" Zone 5614'-5619'
PACKER:	None
ACID TREATMENT:	"A" Zone - 500 gallons etching acid
INITIAL POTENTIAL:	Flowing on 10/64" choke, 194 BFPD, 8% water, 179 BOPD, 15 BWPD
TYPE COMPLETION:	Single producer from "A" Zone.

COMPLETION DATA

CASING: Ran 25 jts. 1007.38' of 9-5/8", 36#, J-55, 8rd. thd., R-3, American casing. Landed 9.75' below RKB at 1017.23'. Howco float shoe at 1017.23, Howco centralizers at 995' and 835'. Cemented with 400 sacks cement with 2 percent CaCl2. Ran 10 barrels soda ash water followed by 10 barrels clean water ahead of cement. Bumped plug with 900 PSI, released pressure, float held ok. Tested 9-5/8" casing and blow-out preventers with 1000# pressure for 30 minutes, held ok.

Ran 187 jts. 5951.50' of 5-1/2", 15.50#, J-55, 8rd. thd., R-2 American casing. Landed 8.50' below RKB at 5960' Schlumberger, 1' off bottom. Howco differential fillup shoe on bottom and Howco baffle collar at 5926.69'. Ran 5 Weatherford spiral centralizers at 5953', 5912', 5792', 5752', and 5590'. Ran 48 Weatherford reciprocating scratchers from 5548' to 5960'. Reciprocated pipe 35' while circulating 1 hour and during cementing. Cemented with 300 sacks Slo-set cement with 2 percent gel. Plug down at 11:37 P.M., 12-3-55. Bumped plug with 1200 PSI, released pressure, float held ok. Set slips.

COMPLETION: Picked up 191 jts. tubing and tagged bottom. Tubing record as follows: 2-3/8" EUE, 4.70#, J-55, 8rd. thd., R-2, Class A tubing

Landed below RKB	7.00
Top joint	31.15
Sub joints	14.10
179 joints	5561.48
Bottom tubing	5613.73.

Tested tree and casing with 1000 PSI. Reversed out mud with water, spaced tubing at 5616' and reversed out water with oil. Picked up tubing 15', went in hole with Lane Wells 1-3/4" expendable tubing tun. Perforated "A" Zone 5614'-5619' with 5 jets per foot, 25 shots. Would not flow natural. Acidized "A" Zone with 500 gallons Dowell etching acid through perforations. Broke formation down at 1900 PSI after 42 gallons injected, pressure bled back to 900 PSI. Injected 126 more gallons at maximum pressure of 2100 PSI. Bled back to 900 PSI. Total acid injected equals 168 gallons. Opened well tp pit. Spent acid to surface in 42 minutes, clean oil 15 minutes later. Cleaned to pit.

16/64" choke, 1 hr. test, flowed 376.20 BFPD, 274.60 BOPD, 27% BS&W. TFP--480#, CP--670#, choke plugged.

12/64" choke, 1 hr. test, flowed 202.50 BFPD, 149.80 BOPD, 27% BS&W. TFP--360#, CP--680#, choke plugged.

Released rig at 4:00 P.M., 12-6-55. Moved off rig and continued testing.

12/64" choke, 199 BFPD, 2% BS&W, 194 BOPD, 4 BWPD.

10/64" choke, 84.50 BFPD, 81.12 BOPD, 3.38 BWPD, TFP--175#, CP--80#.

10/64" choke, 194 BFPD, 8% water, 179 BOPD, 15 BWPD, (initial potential).

ELECTRO LOG DATA

TYPE OF LOG	INTERVAL LOGGED
Schlumberger Electrical Survey 2"	1017'-5960'
Schlumberger Microlog 5"	2000'-5958'

LOG TOPS

Greenhorn	2438	(- 223)
Graneros	2640	(- 427)
Muddy	3008	(- 795)
Dakota Silt	3215	(-1002)
Morrison (?)	3580	(-1367)
Vanguard	4009	(-1796)
Ricrdon	4193	(-1980)
Piper Shale	4364	(-2151)
Piper Limestone	4450	(-2237)
Spearfish	4703	(-2490)
Amsden (?)	4802	(-2589)
Heath (?)	4959	(-2746)
Otter	5118	(-2905)
Kibbey	5262	(-3049)
Kibbey Limestone	5417	(-3204)
Madison	5510	(-3297)
"A" Zone	5616	(-3403)
"B-1" Zone	5758	(-3545)
"B-2" Zone	5776	(-3563)
"C" Intercrystalline	5926	(-3713)

DRILL STEM TESTS

D.S.T. #1: 5761'-5771' ("B-1" Zone) with Halliburton, 1/2" bottom choke, no water cushion. Tool open 4 hours. Tool opened with medium blow, continued throughout test. Gas to surface in 3 hours and 15 minutes. No closed in pressure, tool would not rotate, pipe stuck. Dropped bar, opened circulating sub at 5648', reversed out fluid from drill stem test. Recovered 100' clean oil, 90' oil-and-gas-cut mud and 200' salt sulphur water, and 90' additional feet of water left in hole under circulating sub. IBHFP--15#, FBHFP--580#, BHSIP--3295#, (?), Hydro--3515#.

D.S.T. #2: 5777'-5791' ("B-2" Zone) with Halliburton single packer, 1/2" bottom choke, no water cushion. Tool open 4 hours, closed 30 minutes. Tool opened with good blow, continued throughout test. Gas to surface in 3 hours and 20 minutes. Recovered 273' clean oil, 212' oil-and-gas-cut mud, 4188' salt sulphur water. IBHFP--60#, FBHFP--2110#, BHSIP--2645#, Hydro--3290#.

D.S.T. #3: 5923'-5937' ("C" Zone) with Halliburton straddle packers, 1/2" bottom choke, no water cushion. Tool open 4 hours, closed 30 minutes. Tool opened with very weak blow, died in 2 hours and 35 minutes, remained dead rest of test. Recovered 90' slightly gas-cut mud, no trace of oil or water. IBHFP--15#, FBHFP--32#, BHSIP--920#, Hydro--3405#, bottom packer held ok.

Form No. 2
GENERAL RULES
201, 202, 213,
216, 219, 233.1

(SUBMIT IN QUADRUPLICATE)
TO
OIL AND GAS CONSERVATION COMMISSION
OF THE STATE OF MONTANA
BILLINGS OR SHELBY

NOTICE! (THIS FORM BECOMES A PERMIT WHEN STAMPED APPROVED BY AN AGENT OF THE COMMISSION.)

RECEIVED
MAR 6 - 1957
OIL AND GAS CONSERVATION COMMISSION
OF THE STATE OF MONTANA

SUNDRY NOTICES AND REPORT OF WELLS

Notice of Intention to Drill		Subsequent Report of Water Shut-off	
Notice of Intention to Change Plans		Subsequent Report of Shooting, Acidizing, Cementing	
Notice of Intention to Test Water Shut-off		Subsequent Report of Altering Casing	
Notice of Intention to Redrill or Repair Well		Subsequent Report of Redrilling or Repair	
Notice of Intention to Shoot, Acidize, or Cement		Subsequent Report of Abandonment	
Notice of Intention to Pull or Alter Casing		Supplementary Well History	
Notice of Intention to Abandon Well		Report of Fracturing	
		Workover History	X

(Indicate Above by Check Mark Nature of Report, Notice, or Other Data)

February 27, 19 57

Following is a { ~~notice of intention to do work~~ / report of work done } on land { ~~owned~~ / leased } described as follows:

LEASE: 3929 (7842)

MONTANA (State) Roosevelt (County) East Poplar (Field)

Well No. 68 SW NE Section 11 (m. sec.) 28N (Township) 51E (Range) M.P.M. (Meridian)

The well is located 2007 ft. from { N / ~~S~~ } Northline and 1980 ft. from { E / ~~W~~ } Eastline of Sec. 11

(Locate accurately on Plat on back of this form the well location, and show lease boundary.)

The elevation of the derrick floor above the sea level is 2213'

READ CAREFULLY **DETAILS OF PLAN OF WORK** READ CAREFULLY

(State names of and expected depths to objective sands; show size, weights, and lengths of proposed casings; indicate mudding jobs, cementing points, and all other important proposed work, particularly all details results Shooting, Acidizing, Fracturing.)

DETAILS OF WORK
RESULT

SEE ATTACHED SHEETS

U.S.G.S. Approved 3-1-57
Approved subject to conditions on reverse of form

Date 3-4-57

By [signature] Title

District Office Agent

Company MURPHY CORPORATION

By [signature]

Title Field Production Supt.

Address Poplar, Montana

RECEIVED
MAR 1 1957
OIL AND GAS CONSERVATION COMMISSION
OF THE STATE OF MONTANA - BILLINGS

NOTE:—Reports on this Form to be submitted to the District Agent for Approval in Quadruplicate.

10M--1-56

OVER

WORKOVER HISTORY NO. 1

Date February 28, 1957

Lease and Well East Poplar Unit Well No. 68

Field East Poplar County Roosevelt State Montana

Well Location SW NE Section 11, T28N, R51E

Status Prior to Present Job:

Date Completed December 14, 1955 Date Last Workover None

TD 5961' PBTD 6924' Producing Zone A-3 of the Madison Formation

Perforations 5614-19' (A-3 zone) w/5 j.s.p.f. Cumulative Prod. 20,973 bbls oil, 23,272 bbls water. Latest test 30 BOPD and 75 BWPD

Justification for Workover:

Fluid analysis showed a high salt content in the oil and water possibly causing a salt block. Will attempt to dissolve salt block to increase fluid to keep the well flowing.

Summary of Workover:

2-13-57: PBTD 5924' To eliminate a possible salt block, the formation was washed with 50 barrels of fresh water as follows: Spotted 50 barrels water down tubing. Began injecting fresh water at 3/4 BPM 1200#. Slowed down pump after 5 barrels fresh water in formation, injected at the rate of 1/2 BPM 950#. With 23 barrels in formation, increased pump rate to 3/4 BPM, 1100# (slight formation break). Washed zone by flowing back 5 barrels and injecting 10 barrels. Final injection rate, 3/4 BPM at 1300#. 50 barrels fresh water in formation, 5 barrels oil overflush. Bleed down pressure 900#. Opened well to test tank. Flowed back 27 barrels oil, tubing displacement plus 5 barrels overflush, began getting salty water. Took samples on 5 barrel increments to check chlorides, fresh water injected either picked up salt or was diluted by salt water. Recovered 27 barrels displacement oil, 50 barrels injected water, 20 barrels formation fluid. Turned well through treater to clean up overnight.

2-14-57: PBTD 5924'. Flowed well through treater overnight to clean up. On 4 hour test, open flow, well flowed at the rate of 201 BFPD, 78% BS&W. (44 BOPD, 157 BWPD). Water samples were taken at approximately 5 barrel intervals when flowing the water back and chloride tests were run on the samples. The chlorides increased from 19,000 PPM to 75,000 PPM quite uniformly. This indicates that if any salt were deposited around the well base it had nearly all been dissolved by the first of the fresh water. More likely the water injected was diluted by formation--greater penetration equals greater chloride concentration. A total of 1400# of salt was removed by the 50 barrels of fresh water or an average of 28# per barrel. Before the fresh water treatment, the well averaged 20 BOPD and had a water cut of 82%.

Workover History No. 1 Continued

2-15-57: PBTD 5924', testing. On 24 hour test, open flow, well flowed at the rate of 203 BFPD, 78% BS&W (45 BOPD, 158 BWPD).

2-16-57: PBTD 5924', testing. On 6 hour test, open flow, well flowed at the rate of 195 BFPD, 81% BS&W (27 BOPD, 158 BWPD).

2-17-57: PBTD 5924' testing. On 24 hour test, open flow, well flowed at the rate of 191 BFPD, 81% BS&W, (36 BOPD, 155 BWPD).

2-18-57: PBTD 5924', no test.

2-19-57: PBTD 5924', no test.

2-20-57: PBTD 5924', flowing. On 2 hour test, flowed at rate of 163 BFPD, 80% water, 130 BWPD, 33 BOPD.

2-21-57: PBTD 5924', to drop from report. On 24 hour test, well flowed at the rate of 175 BFPD, 79% water (37 BOPD, 138 BWPD) TFP-10#, CP-700#. Workover Potential.

Re-cap of Workover:

Final Perforations - A-3 zone 5614-19' (unchanged).

Final PBTD - 5924' (unchanged).

Initial Potential after workover - 175 BFPD, 79% water (37 BOPD, 138 BWPD), TFP-10#, CP700#.

Producing zone - A-3 zone of Madison Formation.

Downhole Equipment - (unchanged).

Results of Workover:

Chloride tests indicated that nearly all salt deposits, if any, near the well bore were dissolved by the fresh water increasing oil production by 7 BPD and water production by 63 BPD. Did not produce desired results.

Form No. 2

GENERAL RULES
201, 202, 213,
216, 219, 230,
231, 232

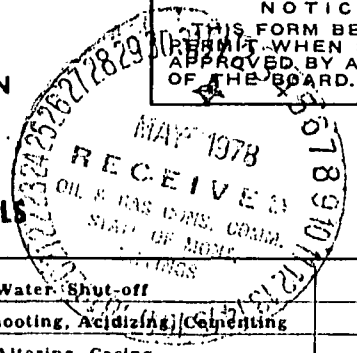
(SUBMIT IN QUADRUPLICATE)

TO

BOARD OF OIL AND GAS CONSERVATION
OF THE STATE OF MONTANA

BILLINGS OR SHELBY

NOTICE
THIS FORM BECOMES A PERMIT WHEN STAMPED APPROVED BY AN AGENT OF THE BOARD.



SUNDRY NOTICES AND REPORT OF WELLS

Notice of Intention to Drill		Subsequent Report of Water Shut-off	
Notice of Intention to Change Plans		Subsequent Report of Shooting, Acidizing, Cementing	
Notice of Intention to Test Water Shut-off		Subsequent Report of Altering Casing	
Notice of Intention to Redrill or Repair Well		Subsequent Report of Redrilling or Repair	
Notice of Intention to Shoot, Acidize, or Cement		Subsequent Report of Abandonment	
Notice of Intention to Pull or Alter Casing		Supplementary Well History	
Notice of Intention to Abandon Well		Report of Fracturing	
		Cancel Work	X

(Indicate Above by Check Mark Nature of Report, Notice, or Other Data)

April 27, 19 78

Following is a {report of work done} on land {leased} described as follows:

LEASE East Poplar Unit No. 68

MONTANA (State) Roosevelt (County) East Poplar Unit (Field)

Well No. 68 SW NE (m. sec.) Section 11 T28N (Township) R51E (Range) MPM (Meridian)

The well is located 2007 ft. from {N} line and 1980 ft. from {E} line of Sec. 11

LOCATE WELL SITE ACCURATELY ON PLAT ON BACK OF THIS FORM.

The elevation of the ground or K.B. above the sea level is 2184' G.L.

READ CAREFULLY — **DETAILS OF PLAN OF WORK** — READ CAREFULLY

(State names of and expected depths to objective sands; show size, weights, and lengths of proposed casings, cementing points, and all other important proposed work, particularly all details of Shooting, Acidizing, Fracturing.)

DETAILS OF WORK
RESULT

Due to the lack of success on other workovers in this area it has been deceided to cancel this work.

This wells status will remain temporarily abandoned.

Approved subject to conditions on reverse of form

Date MAY 1 1978

By Claire T. Humphrey Supvr.
District Office Agent Title

Company Murphy Oil Corporation

By Billy D. McLean

Title District Superintendent

Address P.O. Box 547, Poplar, Montana 59255

BOARD USE ONLY
API WELL NUMBER
25
STATE COUNTY WELL

NOTE:—Reports on this form to be submitted to the appropriate District for approval

WHEN USED AS PERMIT TO DRILL, PERMIT EXPIRES 90 DAYS FROM DATE OF APPROVAL IF WELL NOT SPUDDED OR EXTENSION REQUESTED.

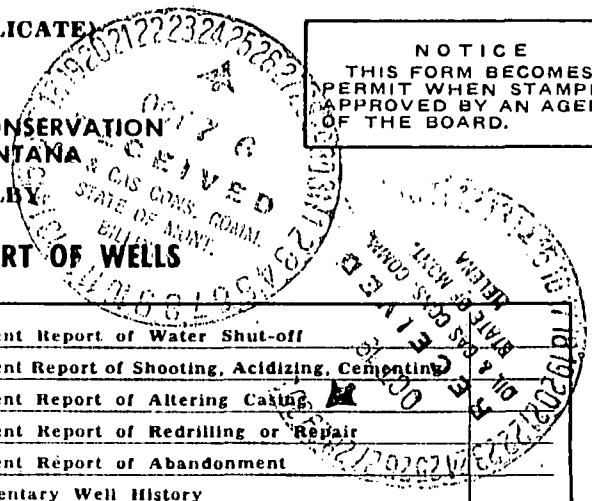
OVER

Form No. 2

GENERAL RULES
201, 202, 213,
216, 219, 230,
231, 232

(SUBMIT IN QUADRUPLICATE)
TO
BOARD OF OIL AND GAS CONSERVATION
OF THE STATE OF MONTANA
BILLINGS OR SHELBY

NOTICE
THIS FORM BECOMES A PERMIT WHEN STAMPED APPROVED BY AN AGENT OF THE BOARD.



SUNDRY NOTICES AND REPORT OF WELLS

Notice of Intention to Drill		Subsequent Report of Water Shut-off	
Notice of Intention to Change Plans		Subsequent Report of Shooting, Acidizing, Cementing	
Notice of Intention to Test Water Shut-off		Subsequent Report of Altering Casing	
Notice of Intention to Redrill or Repair Well		Subsequent Report of Redrilling or Repair	
Notice of Intention to Shoot, Acidize, or Cement		Subsequent Report of Abandonment	
Notice of Intention to Pull or Alter Casing		Supplementary Well History	
Notice of Intention to Abandon Well		Report of Fracturing	
Reactivate T.A. Well	X		

(Indicate Above by Check Mark Nature of Report, Notice, or Other Data)

October 22, 1976

Following is a {notice of intention to do work / report} on land {leased} described as follows:

LEASE East Poplar Unit No. 68

MONTANA (State) Roosevelt (County) East Poplar Unit (Field)

Well No. 68 SW NE 11 (m. sec.) T28N (Township) R51E (Range) MPM (Meridian)

The well is located 2007 ft. from {N} line and 1980 ft. from {E} line of Sec. 11

LOCATE WELL SITE ACCURATELY ON PLAT ON BACK OF THIS FORM.

The elevation of the ground or K.B. above the sea level is 2184' G.L.

READ CAREFULLY — **DETAILS OF PLAN OF WORK** — READ CAREFULLY

(State names of and expected depths to objective sands; show size, weights, and lengths of proposed casings, cementing points, and all other important proposed work, particularly all details of Shooting, Acidizing, Fracturing.)

DETAILS OF WORK
RESULT

It is proposed to reactivate this temp. abandoned well. East Poplar Unit No. 100 is the South offset to No. 68 and is being produced from the B-1 at the rate of 24 BOPD and 50 BWPD with a 66% water cut. At the time East Poplar Unit No. 68 was Temp. Abandoned it was producing at the rate of 3 BOPD and 103 BWPD from the B-1 and A-3 comingled.

It is proposed to set a packer at 5740' and acidize the B-1 perforations, 5758-5762' with 1000 gallons of 28% HCL acid. It is anticipated that recovery should amount to at least what is presently being produced from East Poplar Unit No. 100.

~~(LOCATION INSPECTED & APPROVED)~~

Approved subject to conditions on reverse of form

Date OCT 28 1976

By Blaine L. Hamblep Supervisor
District Office Agent Title

Company Murphy Oil Corporation

By [signature]

Title District Superintendent

Address P.O. Box 547, Poplar, Montana 59255

BOARD USE ONLY
API WELL NUMBER
25
STATE COUNTY WELL

NOTE:—Reports on this form to be submitted to the appropriate District for approval

WHEN USED AS PERMIT TO DRILL, PERMIT EXPIRES 90 DAYS FROM DATE OF APPROVAL IF WELL NOT SPUDDED OR EXTENSION REQUESTED.

OVER

66

Form No. 2

GENERAL RULES
201, 202, 213,
216, 219, 233.1

(SUBMIT IN QUADRUPLICATE)
TO
OIL AND GAS CONSERVATION COMMISSION
OF THE STATE OF MONTANA
BILLINGS OR SHELBY

NOTICE
THIS FORM BECOMES A PERMIT WHEN STAMPED APPROVED BY AN AGENT OF THE COMMISSION.

RECEIVED
APR 3 1969
OIL & GAS CONS. COMM.
STATE OF MONT.
BILLINGS

SUNDRY NOTICES AND REPORT OF WELLS

Notice of Intention to Drill		Subsequent Report of Water Shut-off	
Notice of Intention to Change Plans		Subsequent Report of Shooting, Acidizing, Cementing	
Notice of Intention to Test Water Shut-off		Subsequent Report of Altering Casing	
Notice of Intention to Redrill or Repair Well		Subsequent Report of Redrilling or Repair	
Notice of Intention to Shoot, Acidize, or Cement		Subsequent Report of Abandonment	XX
Notice of Intention to Pull or Alter Casing		Supplementary Well History	
Notice of Intention to Abandon Well		Report of Fracturing	

(Indicate Above by Check Mark Nature of Report, Notice, or Other Data)

March 31, 19 69

Following is a {report of work done} on land {leased} described as follows:

LEASE East Poplar Unit No. 68

MONTANA (State) Roosevelt (County) East Poplar Unit (Field)

Well No. 68 11 (m. sec.) T28N (Township) R51E (Range) MPM (Meridian)

The well is located 2007 ft. from {N} line and 1980 ft. from {E} line of Sec. 11

LOCATE ACCURATELY ON PLAT ON BACK OF THIS FORM THE WELL LOCATION, AND SHOW LEASE BOUNDARY

The elevation of the derrick floor above the sea level is 2184' G.L.

READ CAREFULLY **DETAILS OF PLAN OF WORK** READ CAREFULLY

(State names of and expected depths to objective sands; show size, weights, and lengths of proposed casings; indicate mudding jobs, cementing points, and all other important proposed work, particularly all details results Shooting, Acidizing, Fracturing.)

DETAILS OF WORK
RESULT

East Poplar Unit No. 68 was shut in on March 23, 1969 due to electrical trouble. This well has reached its economical limit producing at the rate of 100 BFPD 97% W.C. 3 BOPD 97 BWPD. Temporarily Abandoned March 31, 1969.

Approved subject to conditions on reverse of form 4-1-69

Date 4-7-69

By [signature] District Office Agent Title [signature]

Company Murphy Oil Corporation

By [signature]

Title District Superintendent

Address P.O. Box 547, Poplar, Montana

COMMISSION USE ONLY
API WELL NUMBER
25
STATE COUNTY WELL

NOTE:—Reports on this form to be submitted to the District Agent for Approval in Quadruplicate WHEN USED AS PERMIT TO DRILL, THIS EXPIRES 90 DAYS FROM DATE OF APPROVAL.

OVER

3 REPORTER PRTG. & SUPPLY CO.

Poor Quality Source Document

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To view the actual hard copy, contact the Region VIII Records Center at (303) 312-6473.

HISTORY OF E.P.U. NO. 24

July 17, 1953

May 6, 1953: 100 feet. Drilling. Spudded in at 4:00 A. M., 5-6-53.

May 8, 1953: 1010 feet. Ran Schlumberger. Ran 30 joints (987.20') 9 5/8 inch, 36#, J-55, 8 rd. thd. H-2 & 3 National Casing; landed 13.00' below RKB, with Larkin Float Shoe at 1000.20', 2 HOWCO centralizers at 848' and 985', 5 B & W Scratchers at 120', 130', 850', 930' and 942'. Cemented with 400 sacks Ideal bulk cement, 15 to 16 lbs. slurry. Clean cement back to surface. Bumped plug with 1050#. Released pressure; held okay. Plug down at 4:15 P.M., 5-7-53. W.O.C.

May 29, 1953: 5615 feet. Preparing to DST #1, from 5606 to 5615. Pulled Core No. 1 from 5600 to 5635. Recovered 19 feet: 6 feet anhydrite and 13 feet limestone with show. Pulled Core No. 2 from 5635 to 5645. Recovered 9½ feet: 3½ feet oolitic limestone with show, 5½ feet anhydrite and 6 inches dolomite.

May 30, 1953: 5706 feet. Drilling dolomite and shale streaks. DST #1 with Halliburton, 5606 to 5615, with straddle packers; 5/8 inch bottom choke, no w.c. Open tool at 11:05 A.M. for 2 hours; closed 20 minutes. Open with fair bubble for 30 minutes, very weak bubble 45 minutes, dead last 45 minutes of test. Recovered: 10 feet rat hole mud. IBHP: 0 FBHP: 0 SBHP: 0 Hydro: 3470#.

June 1, 1953: 5776 feet. Cut and pulled Core #3, 5720-5776. Recovered 56 feet: 8' anhydrite and dolomite, no show; 9' limestone, fair show; 9' anhydrite, no show; 10' limestone, fair show. DST #2 with Halliburton, 5742-5757, with straddle packers; 5/8" bottom choke, no w.c. Open tool at 2:25 P.M., 5-31-53 for 4 hours; closed 20 minutes. Opened with very weak blow; continued throughout test. Recovered: 10 feet free oil, 186' muddy salt water with trace of gas. Chl. 85,000 PPM. IBHFP: 0 FBHFP: 65# SBHIP: 2230# Hydro: 3212#. Bottom packer held okay. DST #3 with Halliburton, 5761-5776; 5/8" bottom choke, no w.c. Open tool at 11:55 P.M., 5-31-53 for 4 hours; closed 20 minutes. Open with very weak blow increasing to strong blow by end of test. Recovered: 270' muddy salt water with trace of gas, 1830' black sulphur water. Chl. 110,000 PPM. IBHFP: 240# FBHFP: 965# SIBHP: 2380# Hydro: 3212#.

June 4, 1953: 5938 feet. Running Schlumberger. Pulled Core #4, 5880-5938; recovered 57': 11' limestone, no show; 5' dolomite, no show; 19' limestone, no show; 9' limestone, slight show; 13' limestone, no show. Ran DST #4, 5913-5938; 5/8" bottom choke, no w.c. HOWCO formation packer set at 5913. Tool open at 5:50 P.M., 6-3-53, with weak blow of air which increased to good blow. Tool open 3 hours; shut in 20 minutes. Recovered: 270' gas, 150' slightly oil and gas cut mud, 270' muddy water with oil show and sulphur odor. Ch. 31,000 PPM. IBHFP: 65# FBHFP: 125# SIBHP: 2875# Hydro: 3620#.

June 5, 1953: 5939 feet Schlumberger equals 5938 feet Driller. Ran 151 joints (5928.80') 5½", 15.50#, J-55, 8 rd. thd. New. 3 American casing; landed 11.60' below RKB with HOWCO float collar at 5896.00' and HOWCO guide shoe at 5938'. Placed HOWCO centralizers at 5863, 5907, and 5933. Placed HOWCO Roto-Wall scratchers at 5849-5854, 5514-5524, 5771-5746, 5756-5766, 5777-5797, 5847-5852, 5860-5865, 5902-5912, 5919-5929. Cemented with 250 sacks HOWCO Posmix "A" with 2% gel, 13.6 to 14.0 slurry. Bumped plug with 1175#; released pressure and held okay. Pipe reciprocated freely throughout cementing. Plug down at 10:38 A.M., 6-5-53. W.O.C. Note: Plus set on Schlumberger measurements.

June 7, 1953: 5939' PBTD. Perforated C Zone, 5913-5920, 4 jet shots per foot. Ran Junk Basket on W.L. Acidized C Zone, 5913-5920, with 500 gallons, 15% regular Dowell acid. Maximum pressure 3000#. Displaced 7 barrels at 1 barrel per minute at 4300#; dropped to 2200#. Displaced 5 barrels at 1 1/4 barrels per minute at 2700#. Final pressure 2200#. Turned to pit at 7:20 P.M. Flowed acid to surface 45 minutes, flowed light heads of acid water for 35 minutes, dead 9:00 P.M. to 10:30 P.M. Started flowing light heads of acid water with trace of oil; dead 7:00 A.M. to 5:00 A.M., 6-9-53. Started swabbing at 5:00 A.M. to 8:00 A.M. Swabbed salt sulphur water with trace of oil. Swabbing down to 1800' at 10 barrels per hour. Chl. 30,000 PPM.

June 10, 1953: 5935 feet PBTD. Swabbing 24 hours at rate of 7 to 10 barrels fluid per hour, 96 to 10[illegible]% salty sulphur water. Fluid level while swabbing 3000'. Fluid showing slight increase in gas.

June 11, 1953: 5935 PBTD. Swabbing machine broke down for 12 hours. Top of fluid in tubing found at 3768. BHP after 12 hour calculated at 1760#; BHP previously at 2975#. Re-acidized perforations, 5913 to 5920, with 1500 gallons; displaced 2 BPM. Pressure built from 1800 to 3400#. No formation break down indicated. Flowed acid back to surface in 15 minutes, strong blow of spent acid for 20 minutes, weak heads for 30 minutes, dead for 4 hours. Swabbed 3 hours, 98% water with fluid level lowered to 2500'.

May 12, 1953: 5935 feet PBTD. [illegible] 7:00 A.M. to 5:00 P.M., 2 to 4 barrels per hour, 99 to 100% water. Fluid level 4000'. Stratafraced C Zone, 5913-5920, with 1000 gallons gel acid and 2000 gallons 15% regular Dowell acid. Displaced [illegible] barrels per minute at 3000#; 4 barrels per minute at 3700# maximum pressure. Pressure after acidizing 3000#. Opened to pit. Flowed displacement water out 6 minutes spent acid 30 minutes and died. Swabbed 11 hours, 2 to 4 barrels per hour, 98 to 100% water. Chl. 40,000 PPM. Fluid level 4000'.

June 13, 1953: 5935 feet PBTD. Swabbing 10 hours, 2 to 3 barrels fluid per hour, 95 to 100% water. Fluid level at 4200'. Re-acidized C Zone, 5913 to 5920, with 2000 gallons gelled channel acid and 4,000 gallons 15% regular B-J acid, followed with 4000 gallons crude oil. Displaced gel and regular acid, 5 barrels per minute at 2000 to 3200# pressure. Oil 5 barrels per minute, 3200 to 3900#. Maximum pressure 3900#; bled down pressure after job completed 3200#. Opened to pit at 11:50 P.M. Flowed clean displacement oil 15 minutes, oil and spent acid water 45 minutes, dead 90 minutes. Flowed by heads 20 minutes, then died. Swabbed 4 hours. Fluid 92 to 96% water. Fluid level at 2800'.

June 14, 1953: 8562 feet PBTD. Flowed acid to surface 41 minutes. Flowed spent acid 24 minutes, then died. Started swabbing at 9:15 A.M. Swabbed down to 2000', 3 trips with swab. 4 trips with swab found fluid at 1200', salt water with slight trace of oil. Chl. 106,000 PPM.

June 15, 1953: 5935 PBTD. Ran Model "K" cast iron cement retainer on tubing, set at 5782. Squeezed perforations, 5913 to 5920, with 25 sacks slo-set and 25 sacks regular cement. Maximum pressure 1700#; held 1500#. Squeezed 38 sacks out, 6 sacks left in pipe-20' above retainer, reversed out 6 sacks. PBTD 5862. Perforated B-2 Zone, 5765 to 5770, 4 bullets per foot. Ran Baker Junk Basket on W.L. Ran Baker FT tool set at 5759. Bottom tail pipe 5766. Acidized B-2 Zone, 5765 to 5770, with 1000 gallons 15% regular Dowell acid. Broke formation 5200# to 3800#. Displaced 1.6 barrels per minute at 3800#; back to 3300#. Final pressure 2500#.

June 16, 1953: 5862' PBTD. Stopped swabbing 3 3/4 hours. Started flowing 1/2" stream of salt sulphur water, no show of oil. Pulled tubing. Ran Baker Model "K" cement retainer on tubing, set at 5759. Squeezed B-2 Zone, 5765 to 5770, with 50 sacks slo-set cement. Breakdown pressure 0. Squeezed out 30 sacks. Maximum pressure 3700#, held 3500#. Reversed out 20 sacks cement. PBTD 5758'. Job complete at 9:15 P.M., 6-15-53. Perforated B-1 Zone, 5747 to 5755, 4 bullets per foot. Ran Baker FT Tool set at 5730. Bottom tail pipe at 5741. Acidized B-1 Zone, with 1000 gallons. Break-down pressure 5200#, dropped to 4000#. Displaced 1 1/2 barrels per minute at 4200#, back to 3800#, built up to 4100#. Pressure bled down to 2000#. Opened to pit. Flowed small stream of flush oil for 3 hours and died. Started swabbing at 7:00 A.M. Swabbed 15 barrels displacement oil in 5 trips. Fluid level at 4000'. Swabbed spent acid water down to 5000'. Last trip swabbing from 5100'. Recovered 150' acid water. Shut down swabbing unit to change lines.

June 17, 1953: 5758 feet PBTD. Changed swab line. Started swabbing 9:00 P.M. Swabbed out spent acid. Swabbed to bottom last trip. 100 feet fluid in hole. Stratafraced B-1 Zone, 5747 to 5755, with 1000 gallons gel acid and 2000 gallons 15% regular Dowell acid. Maximum pressure 4600#. Final pumping pressure 4200#. Maximum displacement 4 barrels per minute, minimum 2 barrels per minute. Opened to pit. Flowed small stream displacement water 1:45 A.M. to 5:00 A.M. Started swabbing 6:00 A.M. Swabbed dry by 9:00 A.M.

Form 9-330

COPY RETAINED DISTRICT OFFICE

Budget Bureau No. 42-R355.2.
Approval expires 12-31-52.

U. S. LAND OFFICE Billings
SERIAL NUMBER Blm-A-029305-A
LEASE OR PERMIT TO PROSPECT

		12				

(LO)CATE WELL CORRECTLY

ENVIRONMENTAL PR(OTECTION AGEN)CY

NOV 5 1998

MONTANA OFFICE

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

LOG OF OIL OR GAS WELL

(Com)pany Murphy Corporation Address Box 76 Poplar

(Less)or or Tract East Poplar Unit Field State Montana

(Wel)l No. 24 Sec. 12 T. 28N R. 51E Meridian County Roosevelt

(Loc)ation 660 ft. {N/S} of S Line and 660 ft. {E/W} of W Line of Sec. 12 Elevation 2179 (Derrick floor relative to sea level)

The information given herewith is a complete and correct record of the well and all work done thereon (so) far as can be determined from all available records.

Signed M. A. James

(Da)te July 6, 1953 Title Asst. Dist. Prod. Supt.

The summary on this page is for the condition of the well at above date.

(C)ommenced drilling May 6, 1953 Finished drilling June 23, 1953

OIL OR GAS SANDS OR ZONES

(*Denote gas by G*)

No. 1, from "A" 5606 to 5616 No. 4, from to

No. 2, from to No. 5, from to

No. 3, from to No. 6, from to

IMPORTANT WATER SANDS

No. 1, from to No. 3, from to

No. 2, from to No. 4, from to

CASING RECORD

Size casing	Weight per foot	Threads per inch	Make	Amount	Kind of shoe	Cut and pulled from	Perforated From—	Perforated To—	Purpose
9 5/8"	36#	8 rd. Thd.	Nat'l.	987.20	Larkin				
						B-2	5765	5770	
5 1/2"	15.5	8 rd. Thd.	Amer.	5936.85	Howco	C	5913	5920	Oil String
						B-1	5747	5755	
						A	5605	5613	

MUDDING AND CEMENTING RECORD

Size casing	Where set	Number sacks of cement	Method used	Mud gravity	Amount of mud used
9 5/8	1000.20	400	Pump & Plug		
5 1/2	5938	250	Pump & Plug		

PLUGS AND ADAPTERS

Heaving plug—Material Length Depth set

Adapters—Material Size

SHOOTING RECORD

Size	Shell used	Explosive used	Quantity	Date	Depth shot	Depth cleaned out

TOOLS USED

Rotary tools were used from 0 feet to 5939 feet, and from feet to feet

Cable tools were used from feet to feet, and from feet to feet

DATES

, 19 Put to producing , 19

The production for the first 24 hours was 63.74 barrels of fluid of which 25 % was oil; 75 % emulsion; % water; and % sediment. Gravity, °Bé.

If gas well, cu. ft. per 24 hours Gallons gasoline per 1,000 cu. ft. of gas

Rock pressure, lbs. per sq. in.

FOLD | MARK

EMPLOYEES

Adapters—Material .... Size ....

SHOOTING RECORD

Size	Shell used	Explosive used	Quantity	Date	Depth shot	Depth cleaned out

TOOLS USED

Rotary tools were used from ......0....... feet to ...5939.... feet, and from .... feet to .... feet

Cable tools were used from .... feet to .... feet, and from .... feet to .... feet

DATES

...., 19..... Put to producing ...., 19.......

The production for the first 24 hours was ..63.74.. barrels of fluid of which ..25.. % was oil; ..75.. % emulsion; ...... % water; and ...... % sediment. Gravity, °Bé. ....

If gas well, cu. ft. per 24 hours .... Gallons gasoline per 1,000 cu. ft. of gas ....

Rock pressure, lbs. per sq. in. ....

EMPLOYEES

A. W. Hoptowit ...., Driller ....M. O. Saathoff........................, Driller

N. W. Strain ...., Driller ...., Driller

FORMATION RECORD

FROM—	TO—	TOTAL FEET	FORMATION

Shlumberger Tops

Judith River - 830

Niabrara - 2060

Carlise - 2230

Greenhorn - 2411

Graneros 2613

Upper Muddy - 2768

Muddy - 2985

Dakota Silt - 3206

Morrison - 3573

Swift - 3648

Rierdon - 3978

Piper Shale - 4332

Piper Ls. - 4411

Gyp Springs - 4468

Spearfish - 4660

Amsden - 4795

Heath - 4956

Otter - 5106

Kibbey Sd. - 5247

Kibbey Ls - 5405

Madison - 5500

(OVER)

16—43094-2

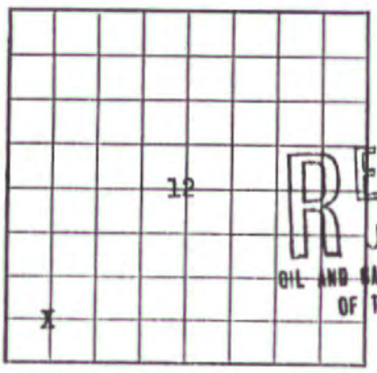
Murphy EPU 24

Budget Bureau No. 42-R355.2.
Approval expires 12-31-52.

BEST COPY AVAILABLE

Form 9-330

U. S. LAND OFFICE Billings
SERIAL NUMBER Blm-A-029305-A
LEASE OR PERMIT TO PROSPECT



LOCATE WELL CORRECTLY

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

LOG OF OIL OR GAS WELL

13

Company Murphy Corporation Address Box 76 Poplar
Lessor or Tract East Poplar Unit Field State Montana
Well No. 24 Sec. 12 T. 28N R. 51E Meridian County Roosevelt
Location 660 ft. {N/S} of S Line and 660 ft. {E/W} of W Line of Sec. 12 Elevation 2179
(Derrick floor relative to sea level)

The information given herewith is a complete and correct record of the well and all work done thereon so far as can be determined from all available records.

Signed

Date July 6, 1953 Title Dist. Prod. Supt.

The summary on this page is for the condition of the well at above date.

Commenced drilling May 6, , 1953 Finished drilling June 23, , 1953

OIL OR GAS SANDS OR ZONES

(Denote gas by G)

No. 1, from "A" 5606 to 5616 No. 4, from to
No. 2, from to No. 5, from to
No. 3, from to No. 6, from to

IMPORTANT WATER SANDS

No. 1, from to No. 3, from to
No. 2, from to No. 4, from to

CASING RECORD

Size casing	Weight per foot	Threads per inch	Make	Amount	Kind of shoe	Cut and pulled from	Perforated From—	Perforated To—	Purpose
9 5/8"	36#	8 rd. Thd.	Nat'l.	987.20	Larkin				
5 1/2"	14.5	8 rd. Thd.	Amer.	5926.85	Howco	B-2	5765	5770	
						C	5913	5920	Oil String
						B-1	5747	5755	
						A	5605	5613	

MUDDING AND CEMENTING RECORD

Size casing	Where set	Number sacks of cement	Method used	Mud gravity	Amount of mud used
9 5/8	1000.20	400	Pump & Plug		
5 1/2	5938	250	Pump & Plug		

PLUGS AND ADAPTERS

Heaving plug—Material Length Depth set
Adapters—Material Size

SHOOTING RECORD

Size	Shell used	Explosive used	Quantity	Date	Depth shot	Depth cleaned out

TOOLS USED

Rotary tools were used from 0 feet to 5939 feet, and from feet to feet
Cable tools were used from feet to feet, and from feet to feet

DATES

, 19 Put to producing , 19

The production for the first 24 hours was 63.74 barrels of fluid of which 25 % was oil; 75 % emulsion; % water; and % sediment. Gravity, °Bé.

If gas well, cu. ft. per 24 hours Gallons gasoline per 1,000 cu. ft. of gas

Rock pressure, lbs. per sq. in.

FOLD | MARK

FOLD | MA

PLUGS AND ADAPTERS

Heaving plug—Material ..... Length ..... Depth set .....

Adapters—Material ..... Size .....

SHOOTING RECORD

Size	Shell used	Explosive used	Quantity	Date	Depth shot	Depth cleaned out

TOOLS USED

Rotary tools were used from 0 feet to 5939 feet, and from ..... feet to ..... feet

Cable tools were used from ..... feet to ..... feet, and from ..... feet to ..... feet

DATES

....., 19.... Put to producing ....., 19.....

The production for the first 24 hours was 63.74 barrels of fluid of which 25 % was oil; 75 % emulsion; ..... % water; and ..... % sediment. Gravity, °Bé. .....

If gas well, cu. ft. per 24 hours ..... Gallons gasoline per 1,000 cu. ft. of gas .....

Rock pressure, lbs. per sq. in. .....

EMPLOYEES

A. W. Hoptowit, Driller M. O. Saathoff, Driller

N. W. Strain, Driller ....., Driller

FORMATION RECORD

FROM—	TO—	TOTAL FEET	FORMATION
			Shlumberger Tops
	830		Judith River -
	2060		Niabrara -
	2230		Carlise -
	2411		Greenhorn -
	2613		Graneros -
	2768		Upper Muddy -
	2985		Muddy -
	3206		Dakota Silt -
	3573		Morrison -
			Swift - 3648
			Rierdon - 3978
			Piper Shale - 4332
			Piper Ls. - 4411
			Gyp Springs - 4468
			Spearfish - 4660
			Amsden - 4795
			Heath - 4956
			Otter - 5106
			Kibbey Sd. - 5247
			Kibbey Ls - 5405
			Madison - 5500

FROM— TO— TOTAL FEET FORMATION 16—43004-2

(OVER)

FORMATION RECORD—CONTINUED

HISTORY OF E.P.U. NO. 24

July 17, 1953

May 6, 1953: 100 feet. Drilling. Spudded in at 4:00 A.M., 5-6-53.

May 8, 1953: 1010 feet. Ran Schlumberger. Ran 30 joints (987.20') 9 5/8 inch, 36#, J-55, 8 rd. thd. R-2 & 3 National Casing; landed 13.00' below RKB, with Larkin Float Shoe at 1000.20', 2 HOWCO centralizers at 848' and 985', 5 B & W Scratchers at 120', 130', 850', 930' and 942'. Cemented with 400 sacks Ideal bulk cement, 15 to 16 lbs. slurry. Clean cement back to surface. Bumped plug with 1050#. Released pressure; held okay. Plug down at 4:15 P.M., 5-7-53. W.O.C.

May 29, 1953: 5645 feet. Preparing to DST #1, from 5606 to 5616. Pulled Core No. 1 from 5600 to 5635. Recovered 19 feet: 6 feet anhydrite and 13 feet limestone with show. Pulled Core No. 2 from 5635 to 5645. Recovered 9½ feet: 3½ feet colitic limestone with show, 5½ feet anhydrite and 6 inches dolomite.

May 30, 1953: 5706 feet. Drilling dolomite and shale streaks. DST #1 with Halliburton, 5606 to 5616, with straddle packers; 5/8 inch bottom choke, no w.c. Open tool at 11:05 A.M. for 2 hours; closed 20 minutes. Open with fair bubble for 30 minutes, very weak bubble 45 minutes, dead last 45 minutes of test. Recovered: 10 feet rat hole mud. IBHFP: 0 FBHFP: 0 BHSIP: 0 Hydro: 3470#.

June 1, 1953: 5776 feet. Cut and pulled Core #3, 5720-5776. Recovered 56 feet: 28' anhydrite and dolomite, no show; 9' limestone, fair show; 9' anhydrite, no show; 10' limestone, fair show. DST #2 with Halliburton, 5742-5757, with straddle packers; 5/8" bottom choke, no w.c. Open tool at 2:25 P.M., 5-31-53 for 4 hours; closed 20 minutes. Opened with very weak blow; continued throughout test. Recovered: 10 feet free oil, 186' muddy salt water with trace of gas. Chl. 85,000 PPM. IBHFP: 0 FBHFP: 65# BHSIP: 2230# Hydro: 3212#. Bottom packer held okay. DST #3 with Halliburton, 5761-5776; 5/8" bottom choke, no w.c. Open tool at 11:55 P.M., 5-31-53 for 4 hours; closed 20 minutes. Open with very weak blow increasing to strong blow by end of test. Recovered: 270' muddy salt water with trace of gas, 1830' black sulphur water. Chl. 110,000 PPM. IBHFP: 240# FBHFP: 965# SIBHP: 2380# Hydro: 3212#.

June 4, 1953: 5938 feet. Running Schlumberger. Pulled Core #4, 5880-5938; recovered 57': 11' limestone, no show; 5' dolomite, no show; 19' limestone, no show; 9' limestone, slight show; 13' limestone, no show. Ran DST #4, 5913-5938; 5/8" bottom choke, no w.c. HOWCO formation packer set at 5913. Tool open at 6:50 P.M., 6-3-53, with weak blow of air which increased to good blow. Tool open 3 hours; shut in 20 minutes. Recovered: 270' gas, 150' slightly oil and gas cut mud, 270' muddy water with oil show and sulphur odor. Ch. 31,000 PPM. IBHFP: 65# FBHFP: 125# SIBHP: 2975# Hydro: 3420#.

June 5, 1953: 5939 feet Schlumberger equals 5938 feet Driller. Ran 151 joints (5926.85') 5½", 15.50#, J-55, 8 rd. thd. Rge. 3 American casing; landed 11.60' below RKB with HOWCO float collar at 5896.09 and HOWCO guide shoe at 5938. Placed HOWCO centralizers at 5665, 5807, and 5933. Placed HOWCO Roto-Wall scratchers at 5499-5504, 5514-5524, 5731-5746, 5756-5766, 5777-5797, 5847-5852, 5860-5865, 5902-5912, 5919-5929. Cemented with 250 sacks HOWCO Pozmix "A" with 27 gel,13.6 to 13.8 slurry. Bumped plug with 1175#; released pressure and held okay. Pipe rotated freely throughout cementing. Plug down at 10:38 A.M., 6-5-53. W.O.C. Note: Pipe set on Schlumberger measurements.

June 9, 1953: 5935' PBTD. Perforated C Zone, 5913-5920, 4 jet shots per foot. Ran Junk Basket on W.L. Acidized C Zone, 5913-5920, with 500 gallons, 15% regular Dowell acid. Maximum pressure 5000#. Displaced 7 barrels at 1 barrel per minute at 4300#; dropped to 2200#. Displaced 5 barrels at 1 1/4 barrels per minute at 2700#. Final pressure 2200#. Turned to pit at 7:20 P.M. Flowed acid to surface 45 minutes, flowed light heads of acid water for 35 minutes, dead 9:00 P.M. to 10:30 P.M. Started flowing light heads of acid water with trace of oil; dead 2:00 A.M. to 5:00 A.M., 6-9-53. Started swabbing at 5:00 A.M. to 8:00 A.M. Swabbed salt sulphur water with trace of oil. Swabbing down to 1800' at 10 barrels per hour. Chl. 30,000 PPM.

June 10, 1953: 5935 feet PBTD. Swabbing 24 hours at rate of 7 to 10 barrels fluid per hour, 96 to 100% salty sulphur water. Fluid level while swabbing 3000'. Fluid showing slight increase in gas.

June 11, 1953: 5935 PBTD. Swabbing machine broke down for 12 hours. Top of fluid in tubing found at 3768. BHP after 12 hour calculated at 1760#; BHP previously at 2975#. Re-acidized perforations, 5913 to 5920, with 1500 gallons; displaced 2 BPM. Pressure built from 1800 to 3400#. No formation break down indicated. Flowed acid back to surface in 15 minutes, strong blow of spent acid for 20 minutes, weak heads for 30 minutes, dead for 4 hours. Swabbed 3 hours, 98% water with fluid level lowered to 2500'.

May 12, 1953: 5935 feet PBTD. Swabbing 7:00 A.M. to 5:00 P.M., 2 to 4 barrels per hour, 99 to 100% water. Fluid level 4000'. Stratafraced C Zone, 5913-5920, with 1000 gallons gel acid and 2000 gallons 15% regular Dowell acid. Displaced 5½ barrels per minute at 3000#; 4 barrels per minute at 3700# maximum pressure. Pressure after acidizing 3000#. Opened to pit. Flowed displacement water out 6 minutes spent acid 30 minutes and died. Swabbed 11 hours, 2 to 4 barrels per hour, 98 to 100% water. Chl. 40,000 PPM. Fluid level 4000'.

June 13, 1953: 5935 feet PBTD. Swabbing 10 hours, 2 to 3 barrels fluid per hour, 95 to 100% water. Fluid level at 4200'. Re-acidized C Zone, 5913 to 5920, with 2000 gallons gelled channel acid and 4000 gallons 15% regular B-J acid, followed with 4000 gallons crude oil. Displaced gel and regular acid, 5 barrels per minute at 2800 to 3200# pressure. Oil 3 barrels per minute, 3200 to 3900#. Maximum pressure 3900#; blod down pressure after job completed 3200#. Opened to pit at 11:50 P.M. Flowed clean displacement oil 15 minutes, oil and spent acid water 45 minutes, dead 90 minutes. Flowed by heads 20 minutes, then died. Swabbed 4 hours. Fluid 92 to 94% water. Fluid level at 2800'.

June 14, 1953: 8562 feet PBTD. Flowed acid to surface 41 minutes. Flowed spent acid 24 minutes, than died. Started swabbing at 9:15 A.M. Swabbed down to 2800', 3 trips with swab. 4 trips with swab found fluid at 1200', salt water with slight trace of oil. Chl. 106,000 PPM.

June 15, 1953: 5935 PBTD. Ran Model "K" cast iron cement retainer on tubing, set at 5882. Squeezed perforations, 5913 to 5920, with 25 sacks slo-set and 25 sacks regular cement. Maximum pressure 1700#; held 1500#. Squeezed 38 sacks out, 6 sacks left in pipe-20' above retainer, reversed out 6 sacks. PBTD 5862. Perforated B-2 Zone, 5765 to 5770, 4 bullets per foot. Ran Baker Junk Basket on W.L. Ran Baker PT tool set at 5755. Bottom tail pipe 5766. Acidized B-2 Zone, 5765 to 5770, with 1000 gallons 15% regular Dowell acid. Broke formation 5200# to 3800#. Displaced 1.6 barrels per minute at 3800#; back to 3300#. Final pressure 2500#.

June 16, 1953: 5862' PBTD. Stopped swabbing 3 3/4 hours. Started flowing 1/2" stream of salt sulphur water, no show of oil. Pulled tubing. Ran Baker Model "K" cement retainer on tubing, set at 5759. Squeezed B-2 Zone, 5765 to 5770, with 50 sacks slo-set cement. Breakdown pressure 0. Squeezed out 30 sacks. Maximum pressure 3700#, held 3500#. Reversed out 20 sacks cement. PBTD 5758'. Job complete at 9:15 P.M., 6-15-53. Perforated B-1 Zone, 5747 to 5755, 4 bullets per foot. Ran Baker PT Tool set at 5730. Bottom tail pipe at 5741. Acidized B-1 Zone, with 1000 gallons. Break-down pressure 5200#, dropped to 4800#. Displaced 1 1/2 barrels per minute at 4800#, back to 3800#, built up to 4100#. Pressure bled down to 3900#. Opened to pit. Flowed small stream of flush oil for 3 hours and died. Started swabbing at 8:00 A.M. Swabbed 15 barrels displacement oil in 5 trips. Fluid level at 4000'. Swabbed spent acid water down to 5000'. Last trip swabbing from 5100'. Recovered 150' acid water. Shut down swabbing unit to change lines.

June 17, 1953: 5758 feet PBTD. Changed swab line. Started swabbing 9:00 P.M. Swabbed out spent acid. Swabbed to bottom last trip. 100 feet fluid in hole. Stratafraced B-1 Zone, 5747 to 5755, with 1000 gallons gel acid and 2000 gallons 15% regular Dowell acid. Maximum pressure 4600#. Final pumping pressure 4200#. Maximum displacement 4 barrels per minute, minimum 2 barrels per minute. Opened to pit. Flowed small stream displacement water 1:45 A.M. to 5:00 A.M. Started swabbing 6:00 A.M. Swabbed dry by 9:00 A.M.

X

June 25, 1953: PBTD 5680. Swabbing. Swabbed 8 to 10 barrels per hour, 50 to 80% water. TSIP: 450# CSIP: 850# Well will flow by small heads.

June 26, 1953: PBTD 5680. Testing. Displaced 15 barrels crude oil in A Zone, 5605 to 5613, at 2250# pressure. Opened to test tank. Flowed 16 barrels displacement oil 2 hours, died to weak heads. Re-acidized A Zone with 200 gallons Dowell mud acid with 2 barrels oil ahead of acid. Displaced oil at 2100#; acid at 1900#. Bleed down 600#. Opened to pit. Flowed spent acid 15 minutes. 30 minute test, open flow, 27.13 barrels fluid, 70% salt water. TSIP: 450# CSIP: 900#

June 27, 1953: PBTD 5680 feet. Testing. 4 hours, 14/64 choke, 63.74 barrels fluid, 75% water. TFP: 280# CP: 875#. 1½ hours, 11/64 choke, 201.81 barrels fluid, 64% salt water, TFP: 350# CP: 925#.

June 28, 1953: PBTD 5680 feet. Shut in to build tank battery. Flowed 9.11 barrels fluid per hour, 65% water, 9/64 inch choke, TFP: 350# CP:950# TSIP: 450#. To drop from reports.

June 18, 1953: 5758 feet PBTD. 8:00 A.M. to 6:00 P.M., swabbed spent acid water. 6:00 A.M. to 10:00 P.M., changed swabbing units. 10:00 P.M. to 8:00 A.M., swabbed 1 to 2 barrels per hour, 90 to 95% salt water. Chl. 150,000 PPM. Fluid level 4500' after 45 minute interval between trips with swab from bottom.

June 19, 1953: 5758 feet PBTD. Swabbed 8:00 A.M. to 3:00 P.M. 1 to 2 barrels per hour, 90 to 95% salt water. Packer failed. Pulled tubing. Ran new Baker PT tool set at 5731. Re-stratafraced B-1 Zone, 5747-5755, with 2000 gallons gel acid, 4000 gallons 15% regular Dowell acid, followed with 4000 gallons crude oil. Maximum pressure 4800#; minimum 4400#. Displaced with two pump trucks, 2.5 to 7 barrels per minute. Bled down to 4200#. No break. Opened to pit at 12:05 A.M. Flowed flush oil 4 hours, decreased to 1/2" stream. Swabbed flush oil 2 hours. Swabbed acid and flush oil 2 hours. Swabbing off bottom.

June 20, 1953: 5680 feet PBTD. Preparing to test A Zone. Swabbed B-1 Zone off bottom, 8:00 A.M. to 6:00 P.M., 1 barrel per hour spent acid water and flush oil. Pulled tubing, ran Baker Junk Basket on W.L. Set Baker Model K Bridge plug on W.L., set at 5684 with 8/10 sacks regular cement on top of plug with wire line dump bailer. PBTD 5680. Perforated A Zone with McCullough, 5605 to 5613, 4 jet shots per foot. Ran Baker Junk Basket on Wire line.

June 21, 1953: 5680' PBTD. Ran Baker PT Tool set at 5630. Tested plug at 5685' with 3000#; held okay. Re-set tool at 5599'. Acidized A Zone, 5605-5613, with 1000 gallons 15% regular Dowell acid. Broke formation with 4400# pressure. Displaced only 150 gallons in formation; pressure dropped to 1000#. Flowed out 150 gallons displacement water, 850 gallons fresh acid, 150 gallons spent acid 14 minutes, oil and salt water 16 minutes. Chl. 110,000 PPM. Shut in 30 minutes. SIP: 475#. Opened in test tank at 5:30 P.M. 30 minutes, OF, 65.10 barrels fluid, 70% water, FP: 0. 3 hours, 14/64 inch choke, 85.10 barrels fluid, 66% water, FP: 325#. 6 hours, 11/64 inch choke, 88.10 barrels fluid, 66% water, FP: 375#. 1 hour, 7/64 inch choke, 8.13 barrels fluid, 65% water, FP: 450#. Packer rubber failed. Preparing to pull tubing.

June 22, 1953: 5680' PBTD. Swabbing. Small flow of oil cut mud through casing. Released PT tool. Flow increased. Conditioned mud to 10.1#. Pulled tubing. Ran 182 joints (5598.75') 2 3/8", E.U.E. 4.70#, J-55, 8 rd. thd. Rge. 2 American tubing with 3.35' perforated sub bull-plugged on bottom; landed 9.08' below RKB spaced as following:

Landed below RKB	9.08'
top joint	31.25'
181 joints	5567.50'
Perf. sub bull-plugged	3.35'
Bottom of tubing	5611.18'

Displaced mud with water. Opened to pit at 2:45 A.M. Flowed very small stream of wash water, 2 hours, with slow steady increase in volume. Swabbed 1 ½ hours, wash water with trace of oil.

June 23, 1953: 5680 feet PBTD. Swabbing. Swabbed 24 hours, 10 to 12 barrels fluid per hour, 85 to 95% water and mud. Chl. 90,000 PPM. (NOTE: 30 minute test, open flow, 39.33 barrels fluid, 70% water not 65.10 barrels fluid).

June 24, 1953: PBTD 5680 feet. Swabbed 24 hours, 8 to 10 barrels fluid per hour, 80 to 90% water and mud. Fluid level 3500 feet. Released rig at 1:00 P.M., 6-23-53.

RECORD OF PLUGGING AND ABANDONMENT

Date April 25, 1960

Lease and Well No. East Poplar Unit Well No. 61

Field East Poplar County Roosevelt State Montana

Well Location SW NE Section 12, T28N, R51E

Status Prior to Abandonment:

Date Completed: December 19, 1955 Date of Last Workover None

T.D. 5943' Perforations A Zone 5603-5617 Prod. Zone None

Cumulative Production None

Justification for Abandonment:

This well was completed as a dry hole and temporarily abandoned on December 19, 1955. Will attempt to cut and recover as much of the available 5½" casing as possible.

Summary of Abandonment:

Set cement plug in 5½" casing with 25 sacks of regular cement with HR-4 retarder added. Plug from 5632 to 5380. Cut and pulled 4168' of Cond. 2 5½", 15.50# casing and 130' of Cond. 4 (junk) 5½", 15.50# casing. Plugged bottom of 10-3/4" surface casing with 25 sack plug. Set 10 sack cement plug at top of surface casing and cemented 3" pipe marker in ground, rising 6' above ground level in accordance with the regulations of the Montana Oil & Gas Conservation Commission.

EAST POPLAR UNIT WELL NO. 61

TO PLUG AND ABANDON

E.P.U. No. 61 was completed as a dry hole and temporarily abandoned on December 19, 1955. The following intervals have been tested and found to be incapable of oil or gas production in commercial quantities:

Perforations		Drill Stem Tests	
"A"	5606'-5612'	"A"	5604'-5606'
"A"	5603'-5609'	"B"	5712'-5731'
"A"	5612'-5617'	"E"	5781'-5787'
		"G"	5809'-5830'

Weight of cement in hole between 5-1/2" casing and 8-3/4" hole — 1 [illegible]. Top of cement at 4631'. Will kill salt water flow with 10.4# per gallon mud. Bottom of 2-3/8" E.U.E. tubing at 5632'. Will set 50 sacks cement plug in 5-1/2" casing from bottom of tubing at 5632' to 5220' (412' plug) lay down tubing. Top of plug in 5-1/2" casing 5220'. Will attempt to cut off and pull as much of the available 4631' of 5-1/2" casing as possible, setting a 25 sack plug at the bottom of the 10-3/4" surface casing 205' to 1009' (49' plug) and a 10 sack plug at the top of 10-3/4" casing (19' plug) with a 3" steel post marker cemented in and capped in accordance with the Montana State Oil & Gas Commission and United States Geological Survey Regulations.

Budget Bureau 42-R358.3.
Approval expires 12-31-55.

Form 9-331a
(Feb. 1951)

(SUBMIT IN TRIPLICATE)

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

Land Office Billings
Lease No. BLM-A 029305A
Unit East Poplar

RECEIVED JAN 11 1956 U.S. GEOLOGICAL SURVEY BILLINGS, MONTANA

SUNDRY NOTICES AND REPORTS ON WELLS

NOTICE OF INTENTION TO DRILL		SUBSEQUENT REPORT OF WATER SHUT-OFF	
NOTICE OF INTENTION TO CHANGE PLANS		SUBSEQUENT REPORT OF SHOOTING OR ACIDIZING	
NOTICE OF INTENTION TO TEST WATER SHUT-OFF		SUBSEQUENT REPORT OF ALTERING CASING	
NOTICE OF INTENTION TO RE-DRILL OR REPAIR WELL		SUBSEQUENT REPORT OF RE-DRILLING OR REPAIR	
NOTICE OF INTENTION TO SHOOT OR ACIDIZE		SUBSEQUENT REPORT OF ABANDONMENT	X
NOTICE OF INTENTION TO PULL OR ALTER CASING		SUPPLEMENTARY WELL HISTORY	
NOTICE OF INTENTION TO ABANDON WELL			

(INDICATE ABOVE BY CHECK MARK NATURE OF REPORT, NOTICE, OR OTHER DATA)

January 5, 19 56

Well No. 61 is located 1980 ft. from {N/S} line and 2080 ft. from {E/W} line of sec. 12

SW NE Section 12 (¼ Sec. and Sec. No.) | 28N (Twp.) | 51E (Range) | M.P.M. (Meridian)

East Poplar (Field) | Roosevelt (County or Subdivision) | Montana (State or Territory)

RECEIVED JAN 12 1956 U.S. GEOLOGICAL SURVEY BILLINGS, MONTANA

The elevation of the derrick floor above sea level is 2162 ft. K.B.

DETAILS OF WORK

COPY RETAINED DISTRICT OFFICE

(State names of and expected depths to objective sands; show sizes, weights, and lengths of proposed casings; indicate mudding jobs, cementing points, and all other important proposed work)

This well was spudded July 23, 1955 and 10-3/4" casing at 1057.52' with 700 sacks cement. The production string was 5-1/2" casing set at 5942' with 300 sacks of cement. Completion attempts were made in the "A" Zone (5603'-5617'). The subsequent swab test and pumping test resulted in a non-commercial well capable of producing 7 BOPD and 60 BWPD. Operations have been suspended and the well shut in pending a further study to explore the possibility of using this well for salt water disposal purposes.

Approved JAN 11 1956
[signature]
District Engineer

I understand that this plan of work must receive approval in writing by the Geological Survey before operations may be commenced.

Company MURPHY CORPORATION

Address 602 Midland Bank Bldg.

Billings, Montana

By Harold Milam
Harold Milam

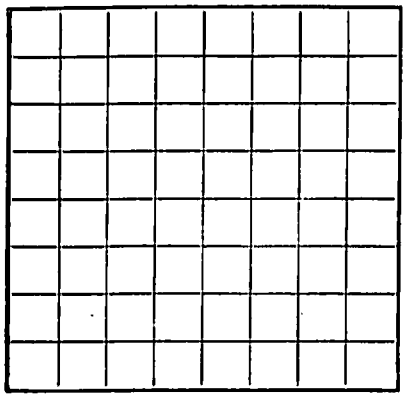
Title Division Production Superintendent

U. S. GOVERNMENT PRINTING OFFICE 16—3437-8

Form 9-330

Budget Bureau No. 42-R-355.8.
Approval expires 12-31-55.

U. S. LAND OFFICE Billings
SERIAL NUMBER BLM-A 029305
LEASE OR PERMIT TO PROSPECT



LOCATE WELL CORRECTLY

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

LOG OF OIL OR GAS WELL

Company MURPHY CORPORATION Address 602 Midland Bank Bldg., Billings, Mont.

Lessor or Tract BLM-A 029305 (Carter Oil Co.) Field East Poplar State Montana

Well No. 31 Sec. 12 T. 28N R. 51E Meridian M.P.M. County Roosevelt

Location 1980 ft. {N.} of N. Line and 2080 ft. {E.} of E. Line of Sec. 12 Elevation 2162' K.B.
(Derrick floor relative to sea level)

The information given herewith is a complete and correct record of the well and all work done thereon so far as can be determined from all available records.

Signed Harold Hilam

Date January 5, 1956 Title Division Production Supt.

The summary on this page is for the condition of the well at above date.

Commenced drilling July 23, 19 55 Temporarily Abandoned December 19, 19 55

OIL OR GAS SANDS OR ZONES

(*Denote gas by G*)

No. 1, from ..... to ..... No. 4, from ..... to .....

No. 2, from ..... to ..... No. 5, from ..... to .....

No. 3, from ..... to ..... No. 6, from ..... to .....

IMPORTANT WATER SANDS

No. 1, from ..... to ..... No. 3, from ..... to .....

No. 2, from ..... to ..... No. 4, from ..... to .....

CASING RECORD

Size casing	Weight per foot	Threads per inch	Make	Amount	Kind of shoe	Cut and pulled from	Perforated From—	Perforated To—	Purpose
10-3/4"	32.75# 40.50#	8	H-40 J-55	1047.77'	Howco				Surface
5-1/2"	15.50#	8	J-55	5939.50'	Howco		5606' 5603' 5612'	5612' 5609' 5617'	Oil String

MUDDING AND CEMENTING RECORD

Size casing	Where set	Number sacks of cement	Method used	Mud gravity	Amount of mud used
10-3/4"	1057.52'	700	Pump & Plug		
5-1/2"	5942.00'	300	Pump & Plug		

PLUGS AND ADAPTERS

Heaving plug—Material ..... Length ..... Depth set .....

Adapters—Material ..... Size .....

SHOOTING RECORD

FOLD | MARK

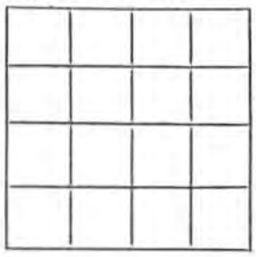
Attach. "Schumberger Well Survey Corp. "Temp Log Rec"

MURPHY EPU 74

803

Form No. 4
(Gen. Rule 206.3 & 231)

LOCATE WELL CORRECTLY



RECEIVED
AUG 23 1956
OIL AND GAS CONSERVATION COMMISSION
OF THE STATE OF MONTANA

(SUBMIT IN TRIPLICATE)
TO
OIL AND GAS CONSERVATION COMMISSION
OF THE STATE OF MONTANA
BILLINGS OR SHELBY

RECEIVED
AUG 31 1956
OIL AND GAS CONSERVATION COMMISSION
OF THE STATE OF MONTANA - BILLINGS

LOG OF WELL

Company Murphy Corporation Lease E.P.U. Fee-O'Connor (6011) Well No. 74

Address 602 Midland Bank Bldg, Billings, Montana Field (or Area) East Poplar

The well is located 658 ft. from (S) line and 1984 ft. from (W) line of Sec. 13 (SE SW)

Sec. 13 ; T. 28N ; R. 51E ; County Roosevelt ; Elevation 2172' K.B.
(D.F., R.B. or G.L.)

Commenced drilling April 10, 1956 ; Completed May 12, 1956

The information given herewith is a complete and correct record of the well. The summary on this page is for the condition of the well at the above date.

Completed as oil well
(oil well, gas well, dry hole)

Signed Harold Milam
Harold Milam

Title Division Production Superintendent

Date August 15, 1956

IMPORTANT ZONES OF POROSITY

(denote oil by O, gas by G, water by W; state formation if known)

From	5740'	to	5748'	O	"B-1"	From	to
From	5597'	to	5604'	O	"A"	From	to
From		to				From	to
From		to				From	to

CASING RECORD

Size Casing	Weight Per Ft.	Grade	Thread	Casing Set	From	To	Sacks of Cement	Cut and Pulled from
9-5/8"	36#	J-55	8rd thd	1038.90'			400	
5-1/2"	15.50#	J-55	8rd thd	5934'			300	

TUBING RECORD

Size Tubing	Weight Per Ft.	Grade	Thread	Amount	Perforations
2-3/8"	4.70#	J-55	8rd thd	5597.59'	open ended

COMPLETION RECORD

Rotary tools were used from 0 to 5930'
Cable tools were used from -- to --
Total depth 5930 ft.; Plugged back to 5673' T.D.; Open hole from to

PERFORATIONS			ACIDIZED, SHOT, SAND FRACED, CEMENTED			
Interval From	Interval To	Number and Size and Type	Interval From	Interval To	Amount of Material Used	Pressure
5740'	5748'	1/2" jet	5740'	5748'	500 gal. etching acid	4200#psi
5597'	5604'	1/2" jet	5597'	5604'	1000 gal. etching acid	3400#psi

(If P&A show plugs above)

INITIAL PRODUCTION

Well is producing from Madison (pool) formation.

I. P. 43 barrels of oil per 24 hours pumping
(pumping or flowing)

neg Mcf of gas per -- hours.

290 barrels of water per 24 hours, or 87 % W.C.

(OVER)

15M—5-55

INITIAL PRODUCTION—(Continued)

Initial 10-day average production _____ (bbl./day) (if taken)

Pressures (if measured): Tubing _____ psi flowing; _____ psi shut-in

Casing _____ psi flowing; _____ psi shut-in

Gravity _____ ° API (corrected to 60° F.)

DRILL STEM TESTS

D.S.T. No.	From	To	Tool Open (Min.)	Shut-In	F.P.	S.I.P.	Recovery	Cushion
			See Attached Page 4					

LOGS RUN

Type	Intervals From	Intervals To
See attached Page 5		

FORMATION RECORD

From	To	SAMPLE AND CORE NO. AND DESCRIPTION	Top of Formation

Form No. 2

GENERAL RULES
201, 202, 213,
216, 219, 233.1

(SUBMIT IN QUADRUPLICATE)
TO

OIL AND GAS CONSERVATION COMMISSION
OF THE STATE OF MONTANA
BILLINGS OR SHELBY

NOTICE
THIS FORM BECOMES A PERMIT WHEN STAMPED APPROVED BY AN AGENT OF THE COMMISSION.

SUNDRY NOTICES AND REPORT OF WELLS

Notice of Intention to Drill		Subsequent Report of Water Shut-off	
Notice of Intention to Change Plans		Subsequent Report of Shooting, Acidizing, Cementing	
Notice of Intention to Test Water Shut-off		Subsequent Report of Altering Casing	
Notice of Intention to Redrill or Repair Well		Subsequent Report of Redrilling or Repair	
Notice of Intention to Shoot, Acidize, or Cement		Subsequent Report of Abandonment	X
Notice of Intention to Pull or Alter Casing		Supplementary Well History	
Notice of Intention to Abandon Well		Report of Fracturing	

(Indicate Above by Check Mark Nature of Report, Notice, or Other Data)

September 28, 19 76

Following is a {report of work done} on land {leased} described as follows:

LEASE East Poplar Unit No. 74

MONTANA (State) Roosevelt (County) East Poplar Unit (Field)

Well No. No. 74 SE SW Section 13 (m. sec.) T28N (Township) R51E (Range) MPM (Meridian)

The well is located 658 ft. from {S} line and 1984 ft. from {W} line of Sec. 13

LOCATE ACCURATELY ON PLAT ON BACK OF THIS FORM THE WELL LOCATION, AND SHOW LEASE BOUNDARY

The elevation of the derrick floor above the sea level is 2160' G.L.

READ CAREFULLY — **DETAILS OF PLAN OF WORK** — READ CAREFULLY

(State names of and expected depths to objective sands; show size, weights, and lengths of proposed casings; indicate mudding jobs, cementing points, and all other important proposed work, particularly all details results Shooting, Acidizing, Fracturing.)

DETAILS OF WORK
RESULT

This well was plugged and abandoned as follows:

A bridge plug was set at 4710' with a 10' cement plug on top. The casing was cut off at approximately 3754'. A 50 sack cement plug was set in the top of the casing stub. A 100' cement plug was set at the top of the Dakota Sand at 3213'. A 100' cement plug was set at the bottom of the 9-5/8" surface casing, 1/2 in and 1/2 out. A 10' cement plug was set at the top of the surfacecasing. The surface casing will be cut off 4' below ground level and a steel cap welded on top of the 9-5/8" casing. No dry hole marker is to be erected on this location.

Surface restoration should be completed by November 1, 1976

LOG RECD. Oct 76 REMOVED FROM WELL CARD

Approved subject to conditions on reverse of form

Date OCT 6 1976

By Charles L. Hawkins Supervisor
District Office Agent Title

(LOCATION INSPECTED & APPROVED)

Company Murphy Oil Corporation

By Brien A. Melear

Title District Superintendent

Address P.O. Box 547, Poplar, Montana 59255

COMMISSION USE ONLY
API WELL NUMBER
25
STATE COUNTY WELL

NOTE:—Reports on this form to be submitted to the District Agent for Approval in Quadruplicate

WHEN USED AS PERMIT TO DRILL, THIS EXPIRES 90 DAYS FROM DATE OF APPROVAL.

OVER

(BACK BLANK)

2

WELL HISTORY

WELL NO.:	East Poplar Unit No. 74
LOCATION:	SE SW Section 13, Township 28 North, Range 51 East
ELEVATION:	2160' Ground - 2173' K.B.
CONTRACTOR:	Zach Brooks Drilling Company
SPUDDED:	4:00 P.M., April 10, 1956
COMPLETED:	May 12, 1956
TOTAL DEPTH:	5930' Driller equals 5930' Schlumberger
CASING:	9-5/8" @ 1038.90' with 400 sacks cement 5-1/2" @ 5933.00' with 300 sacks cement
TUBING:	2-3/8" @ 5597.59'
PERFORATIONS:	"B-1" Zone - 5740'-5748' (plugged) "A" Zone - 5597'-5604'
PACKER:	Baker Model "DA" production packer @ 5720' Baker Model "DA" production packer @ 5578'
ACID TREATMENT:	"B-1" Zone - 500 gallons etching acid (plugged) "A" Zone - 1000 gallons etching acid
INITIAL POTENTIAL:	Pumped 333 BFPD, 87% BS&W (43 BOPD, 290 BWPD), test made July 20, 1956
TYPE COMPLETION:	Single completion from the "A" Zone

COMPLETION DATA

CASING: Ran 25 jts. (1028.15') of 9-5/8", 36#, J-55, 8rd. thd., ST&C, R-3, American Class "A" casing. Landed 10.75' below RKB at 1038.90'. Howco guide shoe on bottom and 1 Howco centralizer at 1024'. Reciprocated casing 15' for 1 hour while circulating and cementing. Cemented with 400 sacks of regular cement with 2% $CaCl_2$. Circulated approximately 50 sacks of clean cement to surface. Bumped plug with 800# psi at 5:45 P.M., 4-12-56. Checked plug with Halliburton at 1000# psi, released pressure, float valve held ok.

Ran 185 jts. (5922.75') of 5-1/2", 15.50#, J-55, 8rd. thd., ST&C, R-2, American Class "A" casing. Landed 10.25' below RKB at 5933', 1' off bottom. Howco float shoe on bottom and Howco baffle collar at 5923'. Ran 5 Weatherford centralizers at 5918', 5784', 5726', 5633', and 5594'. Ran 50 Weatherford scratchers from 5933' to 5520'. Reciprocated casing 40' while circulating 1 hour and during cementing. Cemented with 300 sacks of Slo-set cement with 2% gel. Ran 20 barrels of water ahead of the cement. Pumped plug down with water. Bumped plug with 1500# at 7:00 P.M., 5-3-56, released pressure, float held ok.

COMPLETION: Ran Lane Wells Gamma Ray Neutron and Collar logs. Released rig at 6:00 A.M., 5-4-56. Moved in pulling unit to complete. Picked up tubing and ran Baker casing scraper. Ran Baker junk basket and gauge ring. Set Baker Model "DA" production packer at 5720'. Ran tubing with 15' tail pipe and Baker latch-on sub and seal assembly. Latched on to packer and spaced out tubing. Tested casing, packer, and well head with 1500# psi.

Perforated "B-1" Zone 5740'-5748' with Lane Wells tubing swing jet gun, 4 jets per foot. Swabbed well dry, obtained no fluid movement. Acidized "B-1" Zone with 500 gallons of Dowell etching acid. Pressured up gradually to 4200# psi and soaked for 1 hour and 23 minutes before obtaining break down at 4050# psi. Injected acid at the rate of 1 BPM at 4200#, bleed down pressure 2900#. Opened well to pit, flowed 5 minutes and died. Swabbed load water, spent acid, and began swabbing salt water after 4 trips with swab. Swabbed 1 hour to test tank at the rate of 20.5 BFPH. Swabbed salt water with trace of oil, fluid level 4700'. Tubing filled up overnight, TP--25#. Swabbed well 2 hours to pit and 5 hours to tank. Swabbed down to 5300'. Last hour, swabbed at the rate of 7 BFPH, salt water with trace of oil. Broke formation down with 2100#. Injected salt water at the rate of 2 BPM at 2000#. Squeezed "B-1" Zone perforation through Baker Model "DA" packer, used 40 sacks of cement. Squeezed at 4200# with 10 sacks in formation, dropped 7 sacks on top of packer, and reversed out 23 sacks. Came out of hole. Tested squeeze job with 2000# on casing, held ok. Ran Baker junk basket. Tried to set Baker Model "DA" production packer. After 3 unsuccessful runs, released Lane Wells and called Schlumberger. Ran Baker junk basket on wireline. Ran and set Baker Model "DA" production packer on wireline, top of packer at 5578'. Ran 2-3/8" tubing with Baker seal nipples and tail pipe.

Perforated "A" Zone 5597'-5604' with Schlumberger's 1-3/4" tubing gun, 5 jets per foot. Ran through tubing. Swabbed tubing dry, no fluid movement. Acidized "A" Zone with 500 gallons of Dowell regular 15% acid. Broke formation with 3400# maximum pressure, broke back to 2200#, injected only 2 barrels (84 gallons) into formation. Opened to pit, would not flow. Swabbed displacement water and acid, swabbed down to 5500', made 2 dry runs with swab. Waited 30 minutes. Recovered 2.28 barrels fluid, 2% water, shut in to let set overnight. Fluid level rose to 400' of surface in 12 hours. Swabbed down in 1 hour. Recovered 18 barrels fluid emulsified, 15% water on shakeout. Swabbed 6 hours at the rate of 2 BFPH, 15% water.

Reacidized "A" Zone, 5597'-5604' with 500 gallons of Dowell etching acid. Injected 1 BW at 2150#, bleed down pressure 1600#. Opened to pit, flowed stream for 10 minutes, died, swabbed displacement water and spent acid. Swabbed 2 hours. Swabbed at the rate of 20.5 BFPH, 65-70% water. Fluid level 3500' to 4000'.

Ran bottom hole pressure on static BHP extrapolated to datum of -3550' subsea equals 2750'; at -3600' equals 2765#. Shut in at 6:00 P.M., 5-12-56. Pressure taken at 8:00 A.M., 5-14-56. Total shut in time 34 hours. BHT equals 238 degrees at 5550'. Surface tubing pressure 425#, casing pressure 0# because of packer.

Tubing record (2-3/8", 4.70#, J-55, 8rd. thd., American Class "A" tubing)--

Top joint	30.90	
Pup joint	6.01	
Pup joint	10.02	
Number of total joints	5533.00	
Top of packer	5579.93	(5587' Schlumberger)
Baker latch-on sub	.50	
Baker c.o. assembly	2.50	
Tail pipe	14.66	
Bottom of tail pipe	5597.59	

Tested well as follows:

5-14-56: Flowed on 1/4" choke for 4 hours, flow rate 114 BFPD, 9% water (104 BOPD, 10 BWPD), TFP--10#. Moved in 500 barrel tank, tested overnight (11 hours), flowed on 1/4" choke at rate of 89 BFPD, 40% BS&W (53 BOPD, 36 BWPD), TFP--10#.

5-15-56: Flowed on 1/4" choke for 24 hours at rate of 72 BFPD, 60% water (29 BOPD, 43 BWPD), TFP--10#.

5-16-56: Flowed on 32/64" choke for 23 hours at rate of 106 BFPD, 50% water (53 BOPD, 53 BWPD).

5-17-56: Flowed on 1/2" choke for 4 hours at rate of 106 BFPD, 50% water (53 BOPD, 53 BWPD), TFP--10#.

5-18-56: Flowed 93 BFPD, 56% water (41 BOPD, 52 BWPD).
5-19-56: Flowed 85 BFPD, 54% water (39 BOPD, 46 BWPD), 1/2" choke, TFP-5#.
5-20-56: Flowed 85 BFPD, 57% water (37 BOPD, 48 BWPD), 1/2" choke, TFP-5#.
5-21-56: Flowed 81 BFPD, 60% water (32 BOPD, 49 BWPD), 24 hours, TFP-5#.
5-22-56: Flowed 75 BFPD, 60% water (30 BOPD, 45 BWPD).
5-23-56: Flowed 87 BFPD, 65% water (31 BOPD, 56 BWPD).
5-24-56: Flowed 67 BFPD, 65% water (23 BOPD, 44 BWPD), open flow.
5-25-56: Set pumping unit.
5-26-56: Pumped 95 BFPD, 85% water (14 BOPD, 81 BWPD), well not leveled off.
5-27-56: No test.
5-28-56: Pumped 344 BFPD, 85% water (52 BOPD, 292 BWPD), 24 hour test.
5-29-56: Pumped 265 BFPD, 75% water (66 BOPD, 199 BWPD).
5-30-56: Pumped 194 BFPD, 70% water (58 BOPD, 136 BWPD).
5-31-56: Pumped 226 BFPD, 74% water (59 BOPD, 167 BWPD).
6-1-56: Pumped 108 BFPD, 70% water (32 BOPD, 76 BWPD), 24 hour test.
6-2-56: Pumped 168 BFPD, 71% water (49 BOPD, 119 BWPD), 24 hour test.
6-3-56: Pumped 118 BFPD, 68% water (38 BOPD, 80 BWPD).
6-4-56: No test.
6-5-56: Pumped 195 BFPD, 77% water (45 BOPD, 150 BWPD).
6-6-56: Fluid tested 2 hours 216 BFPD, 77% water (50 BOPD, 166 BWPD). 24 hour test through gun barrel 191 BFPD, 77% water (44 BOPD, 147 BWPD).
6-7-56: Pumped 169 BFPD, 76% water (40 BOPD, 129 BWPD).
6-8-56: Pumped 177 BFPD, 77% water (41 BOPD, 136 BWPD).
6-9-56: No test.
6-10-56: No test.
6-11-56: Pumped 183 BFPD, 83% water (31 BOPD, 152 BWPD).
6-13-56: Pumped 191 BFPD, 82% water (34 BOPD, 157 BWPD).
6-17-56: Pumped 218 BFPD, 85% water (33 BOPD, 185 BWPD).
6-18-56: Pumped 233 BFPD, 91% water (21 BOPD, 212 BWPD).
6-25-56: Pumped 239 BFPD, 93% water (17 BOPD, 222 BWPD).

Pulled rods and started out of hole with 2-3/8" tubing. Ran 73 jts. of 2-3/8" tubing and 106 jts. of 2-7/8" tubing. Ran rods with 2" double volume pump spaced at 3300'. Continued testing as follows:

6-29-56: Pumped 404 BFPD, 90% water (40 BOPD, 364 BWPD), 2 hour fluid test. Production for 24 hours was 33 barrels of clean oil.
6-30-56: Pumped 397 BFPD, 89% water (44 BOPD, 353 BWPD).
7-1-56: Pumped 441 BFPD, 90% water (44 BOPD, 397 BWPD).
7-2-56: Pumped 516 BFPD, 90% water (51 BOPD, 465 BWPD). Production in tank 49 BOPD.
7-3-56: Pumped 465 BFPD, 88% water (56 BOPD, 409 BWPD).
7-4-56: Pumped 406 BFPD, 88% water (49 BOPD, 357 BWPD).
7-7-56: Pumped 397 BFPD, 93% water (28 BOPD, 369 BWPD).
7-8-56: Pumped 397 BFPD, 90% water (40 BOPD, 357 BWPD).

7-9-56: Pumped 328 BFPD, 90% water (33 BOPD, 295 BWPD).
7-10-56: Pumped 431 BFPD, 92% water (35 BOPD, 396 BWPD).
7-11-56: Pumped 410 BFPD, 92% water (33 BOPD, 377 BWPD).
7-12-56: No test.
7-13-56: Pumped 418 BFPD, 86% water (58 BOPD, 360 BWPD), 2 hour test.
7-14-56: No test.
7-15-56: Pumped 410 BFPD, 85% water (62 BOPD, 348 BWPD).
7-18-56: Pumped 455 BFPD, 89% water (50 BOPD, 405 BWPD), 2 hour test.
7-19-56: Pumped 397 BFPD, 88% water (48 BOPD, 349 BWPD), 2 hour test.
7-20-56: Pumped 333 BFPD, 87% water (43 BOPD, 290 BWPD), 24 hour test, this is the initial potential.
7-21-56: Pumped 334 BFPD, 87% water (44 BOPD, 290 BWPD), 24 hour test.
7-22-56: Pumped 333 BFPD, 87% water (43 BOPD, 290 BWPD), 24 hour test.
7-23-56: Pumped 292 BFPD, 87% water (38 BOPD, 254 BWPD), 24 hour test.
7-24-56: Pumped 394 BFPD, 89% water (43 BOPD, 351 BWPD), 24 hour test.
7-25-56: Pumped 353 BFPD, 89% water (39 BOPD, 314 BWPD), 20 hour test.

Set permanent pumping unit and continued testing.

ELECTRO LOG DATA

TYPE OF LOG	INTERVAL LOGGED
Schlumberger Electrical Survey 2"	1080'-5929'
Schlumberger Electrical Survey 5"	2000'-5929'
Schlumberger Microlog 5"	2000'-5927'
Schlumberger Microlog 25"	5500'-5927'
Schlumberger Perforating Record	5597'-5604'
Lane Wells Gamma Ray Log	2900'-5909'
Lane Wells Neutron Log	2900'-5918.5'

LOG TOPS

Eagle	1209	(+ 962)
Greenhorn	2417	(- 244)
Grangros	2623	(- 450)
Upper Muddy	2775	(- 602)
Muddy Sandstone	2995	(- 823)
Dakota	3213	(-1040)
Morrison	3608	(-1435)
Vanguard	3980	(-1807)
Rierdon	4161	(-1988)
Piper Shale	4333	(-2160)
Piper Limestone	4411	(-2238)
Spearfish	4688	(-2515)
Amsden	4805	(-2632)
Heath	4923	(-2750)
Otter	5078	(-2905)
Kibbey Sandstone	5248	(-3075)
Kibbey Limestone	5400	(-3227)
Madison	5496	(-3323)
"A" Zone	5599	(-3426)
"B-1" Zone	5742	(-3569)
"B-2" Zone	5758	(-3585)
"C" Zone	5904	(-3731)

D R I L L S T E M T E S T S

D.S.T. #1: 5598'-5607' ("A" Zone), Halliburton straddle packer test, 1/2" bottom choke, no water cushion. Tool open 4 hours, shut in 30 minutes. Tool opened with a fair blow, increased to medium blow after 30 minutes. Recovered 1720' gas, 380' clean oil, 30' oil-and-gas-cut mud, no water. IBHFP--15#, FBHFP--130#, BHSIP--2532#, Hydro--3390#.

D.S.T. #2: 5609'-5625' ("A" Zone), Halliburton single packer test, 1/2" bottom choke, no water cushion. Tool open 1 hour, shut in 15 minutes. Tool opened with strong blow and remained same throughout test. Recovered 1820' gas, 180' clean oil, 60' oil-and-gas-cut mud, 630' salt and sulphur water. IBHFP--15#, FBHFP--392#, BHSIP--2818#, Hydro--3330#.

D.S.T. #3: 5749'-5760' ("B-2" Zone), misrun, could not get in hole with tester. Reran D.S.T. #3, 5749'-5760', Howco straddle packer test, 1/2" bottom choke, no water cushion. Tool open 4 hours, closed 30 minutes. Tool opened with weak blow, remained same throughout test. Recovered 450' gas, 360' salt water with trace of oil. IBHFP--15#, FBHFP--130#, BHSIP--2660#, Hydro--3170#.

D.S.T. #4: 5735'-5748' ("B-1" Zone), Halliburton straddle packer test, 1/2" bottom choke, 1/4" top choke, no water cushion. Tool open 4 hours, shut in 30 minutes. Tool opened with weak blow for 1st hour, increased to medium blow for rest of test. Recovered 450' gas, 30' clean oil, and 270' of salt water with show of oil. IBHFP--15#, FBHFP--130#, BHSIP--1992#, Hydro--3200#.

D.S.T. #5: 5891'-5902' ("B-1" Zone), Halliburton straddle packer test, 1/2" bottom choke, no water cushion. Tool open 4 hours, shut in 30 minutes. Tool opened with weak blow, continued throughout test. Recovered 540' gas, 5' clean oil, 105' oil-and-gas-cut mud, and 45' muddy salt water. IBHFP--15#, FBHFP--35#, BHSIP--2820#, Hydro--3265#.

Form No. 2
GENERAL RULES
201, 202, 213,
216, 219, 233.1

(SUBMIT IN QUADRUPLICATE)
TO
OIL AND GAS CONSERVATION COMMISSION
OF THE STATE OF MONTANA
BILLINGS OR SHELBY

RECEIVED
NOTICE
THIS FORM BECOMES A PERMIT WHEN STAMPED APPROVED BY AMOUNT OF THE COMMISSION
JAN 3 1964
OIL AND GAS CONSERVATION COMMISSION OF THE STATE OF MONTANA

SUNDRY NOTICES AND REPORT OF WELLS

Notice of Intention to Drill		Subsequent Report of Water Shut-off	
Notice of Intention to Change Plans		Subsequent Report of Shooting, Acidizing, Cementing	
Notice of Intention to Test Water Shut-off		Subsequent Report of Altering Casing	
Notice of Intention to Redrill or Repair Well		Subsequent Report of Redrilling or Repair	
Notice of Intention to Shoot, Acidize, or Cement		Subsequent Report of Abandonment	
Notice of Intention to Pull or Alter Casing		Supplementary Well History	
Notice of Intention to Abandon Well		Report of Fracturing	
Notice of Intention to Workover	xx		

(Indicate Above by Check Mark Nature of Report, Notice, or Other Data)

January 2, 1964

Following is a {notice of intention to do work / ~~report of work done~~} on land {~~xxxxxxx~~ / ~~xxxxxx~~ leased} described as follows:

LEASE O'Connor

MONTANA (State) Roosevelt (County) East Poplar (Field)

Well No. 74 SE SW Section 13 (m. sec.) 28N (Township) 51E (Range) MPM (Meridian)

The well is located 658 ft. from {N / S} line and 1984 ft. from {E / W} line of Sec. 13

(Locate accurately on Plat on back of this form the well location, and show lease boundary.)

RECEIVED
JAN 3 - 1964
OIL AND GAS CONSERVATION COMMISSION OF THE STATE OF MONTANA - BILLINGS

The elevation of the derrick floor above the sea level is 2160Gr.

READ CAREFULLY — DETAILS OF PLAN OF WORK — READ CAREFULLY

(State names of and expected depths to objective sands; show size, weights, and lengths of proposed casings; indicate mudding jobs, cementing points, and all other important proposed work, particularly all details results Shooting, Acidizing, Fracturing.)

DETAILS OF WORK
RESULT

Squeeze the A Zone perforation 5597-5604' with latex cement through Model "DA" Production Packer at 5578'. Sand notch the A Zone 5567' and 5569' with 7.5% acid for sand carrying agent to clean and open the A Formation. Reverse out sand and acid. Pump test.

Approved subject to conditions on reverse of form

Date 1-3-64

By [signature] Title

District Office Agent

Company Murphy Oil Corporation

By [signature]

Title Field Production Superintendent

Address P.O. Box 547, Poplar, Montana 59255

NOTE:—Reports on this Form to be submitted to the District Agent for Approval in Quadruplicate.

WHEN USED AS PERMIT TO DRILL, THIS EXPIRES 90 DAYS FROM DATE OF APPROVAL.

OVER

Form No. 2

GENERAL RULES 201, 202, 213, 216, 219, 233.1

(SUBMIT IN QUADRUPLICATE)

TO

OIL AND GAS CONSERVATION COMMISSION
OF THE STATE OF MONTANA
BILLINGS OR SHELBY

RECEIVED
THIS FORM BECOMES A PERMIT WHEN STAMPED APPROVED BY AN AGENT OF THE COMMISSION.
FEB 14 1964
OIL AND GAS CONSERVATION COMMISSION OF THE STATE OF MONTANA

SUNDRY NOTICES AND REPORT OF WELLS

Notice of Intention to Drill		Subsequent Report of Water Shut-off	
Notice of Intention to Change Plans		Subsequent Report of Shooting, Acidizing, Cementing	
Notice of Intention to Test Water Shut-off		Subsequent Report of Altering Casing	
Notice of Intention to Redrill or Repair Well		Subsequent Report of Redrilling or Repair	
Notice of Intention to Shoot, Acidize, or Cement		Subsequent Report of Abandonment	
Notice of Intention to Pull or Alter Casing		Supplementary Well History	
Notice of Intention to Abandon Well		Report of Fracturing	
		Report of Workover	xx

(Indicate Above by Check Mark Nature of Report, Notice, or Other Data)

February 11, 1964

Following is a {report of work done} on land {leased} described as follows:

LEASE O'Connor

MONTANA (State) Roosevelt (County) East Poplar (Field)

Well No. 74 SE SW Section 13 (m. sec.) 28N (Township) 51E (Range) MPM (Meridian)

The well is located 658 ft. from {S} line and 1984 ft. from {W} line of Sec. 13

LOCATE ACCURATELY ON PLAT ON BACK OF THIS FORM THE WELL LOCATION, AND SHOW LEASE BOUNDARY

The elevation of the derrick floor above the sea level is 2160 Gr.

READ CAREFULLY — **DETAILS OF PLAN OF WORK** — READ CAREFULLY

(State names of and expected depths to objective sands; show size, weights, and lengths of proposed casings; indicate mudding jobs, cementing points, and all other important proposed work, particularly all details results Shooting, Acidizing, Fracturing.)

DETAILS OF WORK
RESULT

See Attached Workover Sheet

RECEIVED
FEB 13 1964
OIL AND GAS CONSERVATION COMMISSION
OF THE STATE OF MONTANA • BILLINGS

V.L.G.A. Approved 2-13-64

Approved subject to conditions on reverse of form

Date Feb. 13, 1964

By Ralph B. Lang Jr. Title District Office Agent

Company Murphy Oil Corporation

By M.H. Jones

Title Field Production Superintendent

Address P.O. Box 547, Poplar, Montana 59255

NOTE:—Reports on this Form to be submitted to the District Agent for Approval in Quadruplicate.

WHEN USED AS PERMIT TO DRILL, THIS EXPIRES 90 DAYS FROM DATE OF APPROVAL.

OVER

WORKOVER HISTORY NO. 1

January 6, 1964

WELL LEASE AND NUMBER: East Poplar Unit Well No. 74

FIELD: East Poplar Unit COUNTY: Roosevelt STATE: Montana

WELL LOCATION: SE SW Section 13, T28N, R51E

STATUS PRIOR TO PRESENT JOB:

Date Completed: May 12, 1956 Date of Last Workover: None

T.D. : 5950' PBTD: 5576' Producing Zone: A-3 Zone of Madison Formation

Perforations: 5597'-5604' Cumulative Production of Present Zone: 55,708 BO, 941,766 MW Latest Test: December 12, 1963 - Pumping 308 BFPD, 99% water, 6 BOPD, 302 BWPD

JUSTIFICATION FOR WORKOVER: Squeeze the A-3 Zone and sand notch the A-4 Zone.

SUMMARY OF WORKOVER:

1-06-64 PBTD 5730' - Moved in and rigged up pulling unit. Pulled rods and tubing out of hole. Ran Baker Seal Assembly without latch on on 2-3/8" workover tubing string. Hydro tested tubing in hole to 5500#. No leaks. Tag Baker Model "D" Production Packer at 5576'. Closed well in overnight.

1-07-64 PBTD 5576' - Squeezed A-3 perforations 5597' to 5604' with 40 sacks of latex cement 2/10 of 1 % H-24 retarder added. Stung into Baker Model "D" Production Packer at 5576'. Pressured csg. to 1500#, broke formation with 3100# at the rate of 3 BPM. Pul'ed out of Model "D" Packer. Mixed 11 bbls. of cmt. slurry displaced down tubing with 5 bbls. of fresh water ahead and 5 bbls. behind. Stung into packer, pressured casing to 1500#. Maximum squeeze pressure 3600# with 32 sacks in formation. Pulled out of packer reversed out 6 sacks cement to pit. Tested squeeze job and casing to 1200#, held ok. Pulled out of hole. Ran MOCO Hydro Jet and collar locator. Closed well in overnight.

1-08-64 PBTD 5576' - Pressured casing and squeeze job to 1500#, held ok. Notched A-4 Zone with MOCO Hydro Jet sub at 5567' & 5569' with 4000 gal. of salt water with 1# sand per gal. followed with 1000 gal. 7½% retarded acid with 1# 20/40 sand per gal. Worked tubing 45° turn while cutting notch. Washed acid over notches six times and reversed out with 400 bbls. of salt water. Pump rate first 36 min. 5000# at 2½ BPM. (Broke suction flange on Halliburton pump. Pumping with one pump last 6 min. 3200# at 2½ BPM). Pulled out of hole laying down 2-3/8" tbg. Ran prod. string tubing in hole. Closed well in overnight.

SUMMARY OF WORKOVER CONTINUED:

1-09-64 PBTD 5576' - Ran rods and 2" x 1¼" x 16' insert pump. Started well pumping 11:00 A.M. 1-09-64.

1-10-64 PBTD 5576' - Pumping on 34" x 13 SPM. Well pumping off. Shot fluid level, indicated fluid at pump. Put 25 bbls. salt water down casing with hot oil truck. Well started pumping indicating down hole equipment was ok.

1-13-64 PBTD 5576' - Moved in pulling unit and rigged up. Ran Baker Model "R" Packer on 2-3/8" tubing with 121' of tail pipe. Tag bottom, spaced out tubing. Put on B.O.P. Closed well in overnight.

1-14-64 PBTD 5576' - Acidized A- Zone, sand notched at 5567' & 5569' with 500 gal. of 15% retarded acid. Circulated hole with salt water. Spotted acid on formation. Set Model "R" Packer at 5453', tail pipe at 5573'. Pressured casing to 1200#, pressured up to, to 2000#, bled down 300# in 5 minutes. Pressured to 2500#, bled 500# in 5 minutes. Pressure to 2500#, bled 700# in 5 minutes. Pressured to 3000#, bled 1200# in 5 minutes. Pressure to 3200#, bled 1400# in 5 minutes. Pressured to 3250#, Broke back to 2700# injecting at the rate of 1/3 BPM. Pumped 11 bbls. in formation at 2800#, 1/3 BPM. Shut down pump. Bled to 2200# in 7 minutes. Released pressure, swabbed acid to pit, switch to test tank. Swabbed at the rate of 232 BFPD, water cut 10%, 209 BOPD, 23 BWPD. Released packer. Pulling out of hole laying down 2-3/8" tubing. Closed well in overnight.

1-15-64 PBTD 5576' - Finished laying down 2-3/8" tubing. Pulling unit down with motor starter out.

1-16-64 PBTD 5576' - Ran tubing and rods in hole with 2" x 1¼" x 16' insert pump. Started well pumping on 84" x 13 SPM at 11:00 AM 1-16-64.

1-17-64 PBTD 5576' - Pumping at the rate of 29 BFPD, 4% water, 28 BOPD, 1 BWPD.

1-18-64 PBTD 5576' - Pumping at the rate of 20 BFPD, .8 of 1% water, 20 BOPD, water .16.

1-19-64 PBTD 5576' - Pumping at the rate of 21 BFPD, 1% water, 20 BOPD, .21 water.

1-20-64 PBTD 5576' - Pumping at the rate of 17 BFPD, .8 water 16.69 BOPD, .13 BWPD.

1-21-64 PBTD 5576' - Pumping at the rate of 15 BFPD, .8 BS&W, 15 BOPD, .02 BWPD. This is the A- Zone initial potential. TO DROP FROM REPORT.

DATE	ZONE	BFPD	W/C	BOPD	BWPD
1-25-64	A-	46	28	33	13
1-26-64	A-	39	20	31	8
1-27-64	A-	36	22	28	8
1-28-64	A-	36	32	25	11
2-01-64	A-	30	54	14	16

RECAP OF WORKOVER:

1. Final Perforations: 5567' - 5569'

2. Final PBTD: 5576'

3. Last test after workover: 30 BFPD, 54% water, (14 BOPD, 16 BWPD)

4. Geologic Name of Producing Zone: A- Zone of Madison Formation

TUBING RECORD:

KKB	8.50
104 Jts. 2-7/8" 650# tbg.	3223.96
1 2-7/8" Seating Nipple	1.10
1 Jt. 2-7/8" 650# tbg.	31.29
75 Jts. 2-3/8" 470# tbg.	2258.62
1 2-3/8" Seating Nipple	1.10
1 2-3/8" Perf. Nipple	3.10
1 Jt. 2-3/8" 470# tbg.	31.80
1 Howco tbg. anchor	2.40
	5561.87

ROD RECORD:

34	7/8" scrappers	850'
20	7/8" plain	500'
75	3/4" plain	1875'
90	5/8" plain	2250'
Subs		22
		5499

PUMP DATA:

2" x 1-1/4 x 16' insert pump T.H.D.

ZONE CHANGE RESULTS:

DATE	ZONE	BFPD	W/C	BOPD	BWPD
12-02-63	A-	398	98	8	390
2-01-64	A-	30	54	14	16
		-368	-44	+ 6	-374

Form No. 2

GENERAL RULES
201, 202, 213,
216, 219, 233.1

(SUBMIT IN QUADRUPLICATE)

TO

OIL AND GAS CONSERVATION COMMISSION
OF THE STATE OF MONTANA
BILLINGS OR SHELBY

NOTICE!
THIS FORM BECOMES A PERMIT WHEN STAMPED APPROVED BY AN AGENT OF THE COMMISSION.

RECEIVED
APR 27 1956

SUNDRY NOTICES AND REPORT OF WELLS

Notice of Intention to Drill		Subsequent Report of Water Shut-off	
Notice of Intention to Change Plans		Subsequent Report of Shooting, Acidizing, Cementing	
Notice of Intention to Test Water Shut-off		Subsequent Report of Altering Casing	
Notice of Intention to Redrill or Repair Well		Subsequent Report of Redrilling or Repair	
Notice of Intention to Shoot, Acidize, or Cement		Subsequent Report of Abandonment	
Notice of Intention to Pull or Alter Casing		Supplementary Well History	X
Notice of Intention to Abandon Well		Report of Fracturing	

(Indicate Above by Check Mark Nature of Report, Notice, or Other Data)

April 26, 1956

Following is a { ~~notice of intention to do work~~ / report of work done } on land { ~~mineral~~ / leased } described as follows:

LEASE E.P.U. Fee-O'Connor (6011)

MONTANA (State) Roosevelt (County) East Poplar (Field)

Well No. 74 SE SW Section 13 (m. sec.) 28N (Township) 51E (Range) M.P.M. (Meridian)

The well is located 658 ft. from { ~~N~~ / S } south line and 1984 ft. from { ~~E~~ / W } west line of Sec. 13

(Locate accurately on Plat on back of this form the well location, and show lease boundary.)

The elevation of the derrick floor above the sea level is 2172' K.B.

READ CAREFULLY — DETAILS OF PLAN OF WORK — READ CAREFULLY

(State names of and expected depths to objective sands; show size, weights, and lengths of proposed casings; indicate mudding jobs, cementing points, and all other important proposed work, particularly all details results Shooting, Acidizing, Fracturing.)

DETAILS OF WORK
RESULT

Spudded at 4:00 P.M., 4-10-56. Ran 27 jts. (1028.15') of 9-5/8", 36#, J-55, 8rd. thd., ST&C, R-3, American casing. Landed 10.75' below RKB at 1038.90'. Howco guide shoe on bottom and one Howco centralizer at 1024'. Reciprocated casing 15' for 1 hour while circulating and cementing. Cemented with 400 sacks of regular cement with 2 percent $CaCl_2$. Circulated approximately 50 sacks of clean cement to surface. Bumped plug with 800# PSI, checked plug with Halliburton at 1000# PSI, released pressure, float valve held ok.

Approved U.S.G.S. 4-27-56

Approved subject to conditions on reverse of form

Date 4/28/56

By [signature] Title

District Office Agent

Company MURPHY CORPORATION

By Harold Millam

Title Division Production Superintendant

Address 602 Midland Bank Bldg., Billings, Mont.

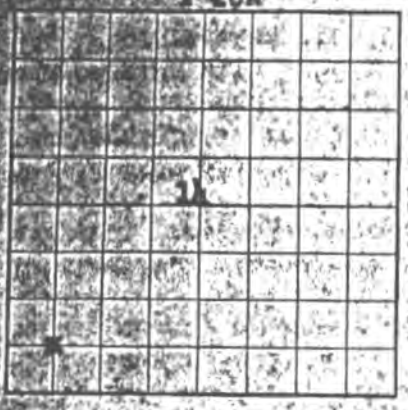
NOTE:—Reports on this Form to be submitted to the District Agent for Approval in Quadruplicate.

WHEN USED AS PERMIT TO DRILL, THIS EXPIRES 90 DAYS FROM DATE OF APPROVAL

15M--8-55

OVER

Form 9-330



LOCATE WELL CORRECTLY

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

LOG OF OIL OR GAS WELL

13

Company Murphy Corporation Address Box 76, Poplar, Montana

Lessor or Tract East Poplar Unit Field East Poplar State Montana

Well No. 22 Sec. 11 T. 28N R. 51E Meridian Principal County Roosevelt

Location 560 ft. {N. / S.} of S Line and 560 ft. {E. / W.} of W Line of Sec. 11 Elevation 2190
(Derrick floor relative to sea level)

The information given herewith is a complete and correct record of the well and all work done thereon so far as can be determined from all available records.

Signed Harold Murdock

Date May 1, 1953 Title District Production Supt.

The summary on this page is for the condition of the well at above date.

Commenced drilling March 20, 19 53 Finished drilling April 27, 19 53

OIL OR GAS SANDS OR ZONES

(Denote gas by G)

No. 1, from B-1 5727 to 5735 No. 4, from ..... to .....

No. 2, from B-2 5745 to 5760 No. 5, from ..... to .....

No. 3, from C 5892 to 5920 No. 6, from ..... to .....

IMPORTANT WATER SANDS

No. 1, from ..... to ..... No. 3, from ..... to .....

No. 2, from ..... to ..... No. 4, from ..... to .....

CASING RECORD

Size casing	Weight per foot	Threads per inch	Make	Amount	Kind of shoe	Cut and pulled from	Perforated From—	Perforated To—	Purpose
9 5/8	36#	8 rd.	American	1004.03	Larkin				Surface
5 1/2	15.50#	8 rd.	"	5929.50	"		5906	5918	Oil String

MUDDING AND CEMENTING RECORD

Size casing	Where set	Number sacks of cement	Method used	Mud gravity	Amount of mud used
9 5/8	1017.03	400	Pump & Plug		
5 1/2	5941.00	250	Pump & Plug		

MARK

PLUGS AND SHOTS

Heaving plug—Material ..... Length ..... Depth set .....

Adapters—Material ..... Size .....

SHOOTING RECORD

Size	Shell used	Explosive used	Quantity	Date	Depth shot	Depth cleaned out

TOOLS USED

Rotary tools were used from 0 feet to 5942 feet, and from ..... feet to ..... feet

Cable tools were used from ..... feet to ..... feet, and from ..... feet to ..... feet

DATES

....., 19.... Put to producing April 27, 19....

The production for the first 24 hours was 82 barrels of fluid of which 95.6 % was oil; 53 % emulsion; .... % water; and 4.4 % sediment.

Gravity, °B6. .....

If gas well, cu. ft. per 24 hours .....

Gallons gasoline per 1,000 cu. ft. of gas .....

Rock pressure, lbs. per sq. in. .....

EMPLOYEES

R. M. Ogburn, Driller

H. K. Wilson, Driller

M. W. Strain, Driller

.....

FORMATION RECORD

FROM—	TO—	TOTAL FEET	FORMATION
			SCHLUMBERGER DEPTHS
Eagle	1209		Piper Shale 4345
Niobrara	2070		Piper Limestone 4420
Greenhorn	2419		Gypsum Springs 4475
Graneros	2624		Spearfish 4670
Upper Muddy	2779		Amsden 4750
Muddy	2997		Heath 4920
Skull Creek	3041		Otter 5073
Dakota Silt	3220		Kibbey Sand 5228
Morrison	3598		Kibbey Limestone 5366
Swift	3660		Madison 5469
Rierdon	3987		

(OVER)

FORMATION RECORD—Continued

(Continued)

Tested 5½" casing with 1000# for 30 minutes; held okay. Top of cement at 5879'; float collar at 5906'. Drilled to 5930' Total depth driller. Ran Lane-Wells Gamma Ray-Neutron and collar log. Total depth Lane-Wells 5930'. Perforated interval, 5907-5918, with 4 jet shots per foot, (Lane-Wells measurement). Ran 190 joints (5885.78') of 2 3/8" EUE tubing, with 3.78' perforated nipple bull plugged on bottom; landed 10.20' below RKB. Bottom of tubing at 5899.78'. Displaced mud with water, water with oil; well would not flow. Swabbed displacement oil down to 3000'. Swabbed 130 barrels of oil into test tank, (54 barrels displaced oil, 76 barrels from formation), fluid level while swabbing remained at 3000'; swabbed only clean oil. Acidized "C" Zone from 5908-5918 with 1000 gallons of regular acid; broke formation at 2900#. Displaced 5 barrels per minute at 2300#. Displaced acid with oil. Over-flushed 225 gallons of oil, final pressure was 1300#. Flowed new clean oil to surface in 25 minutes. Cleaned to pits for 80 minutes (did not get any free acid back). CSIP: 925# TSIP: 950#. Turned into tanks at 11:30 A.M., 4-27-53. Released rig at 12:00 o'clock noon, 4-27-53. PBTD: 5930' Driller equals 5930' Lane-Wells.

HISTORY OF OIL OR GAS WELL

16—43094-1 U. S. GOVERNMENT PRINTING OFFICE

It is of the greatest importance to have a complete history of the well. Please state in detail the dates of redrilling, together with the reasons for the work and its results. If there were any changes made in the casing, state fully, and if any casing was "sidetracked" or left in the well, give its size and location. If the well has been dynamited, give date, size, position, and number of shots. If plugs or bridges were put in to test for water, state kind of material used, position, and results of pumping or bailing.

Spudded in at 3:30 A.M., 3-20-53. Drilled to 1031' and then ran 24 joints, (1004.03') 9 5/8" casing; landed 13.00' below RKB. Cemented with 400 sacks of Ideal regular bulk cement, 15.5#/gallon slurry. Bumped plug with 1100#. Released pressure; would not hold. Shut-in with 800# on pipe. Plug down at 7:15 P.M., 3-21-53. Clean cement back to surface. Drilled to 2975'. Depth correction: 2975' equals 2982' SLM. Cut Core No. 1 from 2982-2994, recovered 12'. Cut Core No. 2 from 2994-3020, recovered 18'. Cut and pulled Core No. 3 from 3020-3025, recovered 13½'. Ran D.S.T. No. 1, 3014-3025, with HOWCO formation packer set at 3014'. Tool open at 6:41 P.M. Open for 30 minutes with strong blow of air throughout test. Closed tool at 7:21 P.M. Shut in for 15 minutes. Recovered: 925' fresh water with no shows of oil or gas. Chlorides: 660 ppm. IBHFP: 65# FBHFP: 425# SIBHP: 1140# Hydro: 1610#. Drilled to 4930'. Cut and pulled Core No. 4 from 4930-4960, recovered 30'. Cut and pulled Core No. 5 from 4960-4990, recovered 20'. Drilled from 4990 to 5006, then cut and pulled Core No. 6 from 5006-5021 (Heath), recovered 13½'. Reamed rat hole and ran D.S.T. No. 2 from 5004 to 5008.50', with Johnston tool and straddle packers, 1/2" bottom choke, no water cushion. Tool open at 1:25 P.M., 4-8-53; for 1 hour. No shut-in (not enough space between packers for pressure bomb); tool open with strong blow which decreased to weak blow at end of test. Recovered: 1860' clear salt water with trace of oil in top stand only. Bottom packer failed to effect a complete shut-off; pressure bomb showed gradual decrease in pressure. Drilled to 5550, then cut Core No. 7 from 5550-5573, recovered 23'. Cut and pulled Core No. 8 from 5573-5603, recovered 29' (top of the "A" Zone at 5596'). Ran D.S.T. No. 3, 5592-5603 with Johnston Tool, 1/2" Bottom choke, no W.C. Tool open at 5:46 P.M., 4-15-53 for 168 minutes, closed 20 minutes. Tool open with good blow, increased to strong blow in 10 minutes. Gas to surface in 159 minutes; salt water to surface, with slight trace of oil in 168 minutes; bottom 90' black sulphur water cut mud. IBHFP: 825# FBHFP: 2775# BHSIP: 2950# Hydro: 3275#. Drilled from 5603-5714', then Cored No. 9 from 5715 to 5750, recovered 35'. Drilled from 5750 to 5850, then cut and pulled Core No. 10, from 5850-5901, recovered 51'. Cut and pulled Core No. 11 from 5901-5911, recovered 8'. Strapped pipe out of hole and had the following depth correction: 5911' equals 5916' SLM. Ran D.S.T. No. 4, 5901-5916, with Halliburton Tool, 5/8" bottom choke, no water cushion; tool open at 2:32 P.M., 4-20-53, for 138 minutes; closed tool for 20 minutes. Tool open with good blow increased to strong blow in 10 minutes. Recovered: 2433' total fluid; 1147' clean oil, 1286' oil and gas cut mud with free oil. Note: Bottom 248' had more free oil than gas cut mud; no show of water. IBHFP: 60# FBHFP: 930# BHSIP: [illegible] Hydro: 3380#. Cut and pulled Core No. 12 from 5916-5926, recovered [illegible] Cut and pulled Core No. 13 from 5926-5937, recovered 12'. Total depth: [illegible] (5929.30') 5½" casing; landed 11.78' below RKB, cemented with 270 sacks of [illegible] and Ideal cement mix with [illegible] gel. Bumped plug with 1200#; released pressure, held [illegible], 4-22-53. Pipe rotated freely through [illegible]

RECEIVED

DATE: May 11, 1953

FROM: Murphy Corporation
Poplar, Montana

TO: Oil & Gas Conservation Commission

MURPHY CORPORATION

EAST POPLAR UNIT WELL NO. 22

SW/4 SW/4 Section 14, Township 28N, Range 51E
Roosevelt County, Montana

Elevation 2190' KB.

MURPHY CORPORATION

EAST POPLAR UNIT WELL NO. 22

LOCATION: 660' from the West Line, and 560' from the South Line, SW/4 SW/4 Section 14, Township 28N, Range 51E, Roosevelt County, Montana.

ELEVATION: 2177' Ground; 2190' KB.

SPUDDED: March 20, 1953.

COMPLETED: April 27, 1953.

TOTAL DEPTH: 5937' Driller; 5940' Lane-Wells; 5942' Schlumberger; 5940' Casing Measurements: PBTD 5930' Driller equals 5930' Lane-Wells.

March 20: Spudded at 3:30 A.M., and drilled a 12 3/4" surface hole to 965 feet.

March 21: Drilled 12 3/4" hole from 965' to 1029'; ran Schlumberger E.S. Set 1004.03' of 9 5/8", 36#, J-55, 8 rd. thd. R-2 & 3 American casing. Landed 13.00' below KB; cemented with 400 sacks of Ideal regular bulk cement, 15.50# slurry, clean cement back to surface. Plug down at 7:15 P.M. Released pressure; would not hold. Shut-in 800# on pipe.

March 22: Waiting on cement.

March 23: Drilled cement out from under 9 5/8" casing. Drilled 8 3/4" hole from 1031 to 1276 feet.

March 24: Drilled from 1276 to 2435 feet.

March 25: Drilled from 2435 to 2975 feet; depth correction: 2975' equals 2982 SLM.

March 26: Cut and pulled Core No. 1, from 2982 to 2994, recovered 12 feet. Started cutting Core No. 2 at 2994 feet.

March 27: Finished cutting and pulled Core No. 2 from 2994-3020, recovered 18 feet. Cut and pulled Core No. 3 from 3020-3025, recovered 13½ feet. Ran Drill Stem Test No. 1 from 3014-3025.

March 28: Reamed 7 7/8" rat hole and drilled from 3025 to 3372 feet.

March 29-April 5: Drilled from 3372 to 4930 feet.

April 5: Started cutting Core No. 4 at 4930 feet.

HISTORY

April 6: Finished cutting and pulled Core No. 4 from 4930-4960, recovered 30 feet. Started cutting Core No. 5 at 4960 feet.

April 7: Finished cutting and pulled Core No. 5 from 4960-4990, recovered 20 feet. Reamed core hole and drilled from 4990-5006. Circulated samples and started cutting core No. 6 at 5006 feet.

April 8: Finished cutting and pulled Core No. 6 from 5006-5021, recovered 13½ feet. Reamed core hole. Ran Drill Stem Test No. 2 from 5004-5008½. Drilled from 5021 to 5034 feet.

April 9-14: Drilled from 5034 to 5550 feet.

April 14: Cut and pulled Core No. 7 from 5550-5573, recovered 23 feet. Started cutting Core No. 8 at 5573 feet.

April 15: Finished cutting and pulled Core No. 8 from 5573-5603, recovered 29 feet. Ran Drill Stem Test No. 3 from 5592-5603'.

April 16: Drilled from 5603 to 5715 feet.

April 17: Cut and pulled Core No. 9 from 5715-5750, recovered 35 feet. Drilled from 5750 to 5786 feet.

April 18: Drilled from 5786 to 5850 feet. Started cutting Core No. 10 at 5850 feet.

April 19: Finished cutting and pulled Core No. 10 from 5850-5901, recovered 51 feet. Ran Schlumberger E.S. and Micrologs. Schlumberger total depth: 5911 feet.

April 20: Cut and pulled Core No. 11, 5901-5911, recovered 8 feet. Strapped pipe out of hole: depth correction: 5911 equals 5916' SLM. Ran Drill Stem Test No. 4 from 5901-5916'.

April 21: Cut and pulled Core No. 12 from 5916 to 5926, recovered 11 feet. Cut and pulled Core No. 13 from 5926-5937', recovered 12 feet.

April 22: Set 5929.30' (192 joints) of 5½", 15.50#, J-55, 8 rd. thd. German and American casing; landed 11.70' below RKB; cemented with 250 sacks of Pozmix and Ideal cement with 2% gel. Bumped plug with 1000#; pressure held okay. Plug down at 9:30 P.M. Pipe rotated freely throughout job.

April 23-25: Waiting on cement.

April 25: Drilled plug and float collar to 5930'; drilled cement from 5876 to 5903 feet. Ran Lane-Wells Gamma Ray-Neutron Log. Perforated interval from 5908 to 5918 with 4 jet shots per foot.

April 25-27: Well undergoing completion, as set forth under Completion Data. Rig released at 12:00 noon, 4-27-53.

DRILLING BIT AND TOTCO RECORD

Run No.	Make	Size	Type	Serial No.	From	To	Totco Footage	Degrees
1	Hughes	12 1/4"	OSC-3-J	5431	0	1031	120'	1/2°
							750'	1/2°
2	"	8 3/4"	"	48833	1031	2470	2470	1/2°
3	"	"	"	56625	2470	2982	2975	1°
4	"	"	OSC-1-J	18929	2982	3265	3242	1°
5	"	"	"	18331	3265	3507		
6	"	"	OSC-J	18593	3507	3621	3547	1/2°
7	"	"	"	62230	3621	3705	3705	1°
8	"	"	OSC	28941	3705	3910	3910	1 1/2°
9	"	"	"	76109	3910	4096		
10	"	"	"	76083	4096	4373		
11	"	"	OWV	81445	4373	4484	4484	3/4°
12	"	"	"	68507	4484	4629		
13	"	"	"	68750	4629	4812	4812	3/4°
14	"	"	"	68435	4812	4930	4930	3/4°
15	"	"	W7R	47316	4930	5059	4936	3/4°
16	"	"	OWV	81424	5059	5144	5144	3/4°
17	"	"	"	68955	5144	5280	5352	1/4°
18	"	"	OWV	34965	5280	5361	5352	1/4°
19	"	"	"	50279	5361	5470	5361	1/4°
20	"	"	OWV-J	49596	5470	5550	5550	1/4°
21	"	7 7/8"	OWS	41508	5603	5715	5715	1/4°
22	"	"	OWS	57406	5750	5850	5850	1/4°

DIAMOND CORE BIT RECORD

Core No.	Make	Size	Serial No.	From	To	Footage
1	Christensen	7 7/8"	J-1847	2983	2994	11'
2	Christensen	"	"	2994	3020	26'
3	Christensen	"	"	3020	3025	5'
4	Christensen	"	"	4930	4960	30'
5	Christensen	"	"	4960	4990	30'
6	Christensen	"	"	4990	5021	31'
7	Christensen	"	"	5550	5573	23'
8	Christensen	"	"	5573	5603	30'
9	Christensen	"	"	5715	5750	35'
10	Christensen	"	"	5850	5901	51'
11	Christensen	"	"	5901	5911	10'
12	Christensen	"	"	5916	5926	10'
13	Christensen	"	"	5926	5937	11'

Total Footage: 303'

E L E C T R O L O G D A T A

TYPE OF LOG	INTERVAL LOGGED
Schlumberger Electric Logs:	
Electrical Survey 2"	100-5910
Electrical Survey 5"	2000-5910
Microlog 5"	2000-5908
Microlog 25"	5500-5908
Lane-Wells Radioactivity Logs:	
Gamma-Ray	4000-5918
Neutron	4000-5928

TENTATIVE TOPS

Judith River	812	(+1378)
Eagle	1209	(+ 981)
Niobrara	2070	(+ 120)
Greenhorn	2419	(- 229)
Graneros	2624	(- 434)
Upper Muddy	2779	(- 589)
Muddy	2997	(- 807)
Skull Creek	3041	(- 851)
Dakota Silt	3220	(-1030)
Morrison	3598	(-1408)
Swift	3660	(-1470)
Rierdon	3987	(-1797)
Piper Shale	4345	(-2155)
Piper Limestone	4420	(-2230)
Gypsum Springs	4475	(-2285)
Spearfish	4670	(-2480)
Amsden	4750	(-2560)
Heath	4920	(-2730)
Otter	5073	(-2883)
Kibbey Sand	5228	(-3038)
Kibbey Limestone	5366	(-3176)
Madison	5469	(-3279)
"A" Zone	5600	(-3410)
"B-1" Zone	5727	(-3537)
"B-2" Zone	5745	(-3555)
"C" Zone Intercrystalline Porosity	5892	(-3702)

CORE DESCRIPTIONS

Core No. 1

2982-2994 — Rec. 12'

C. T. 63, 59, 45, 38, 40/ 40, 33, 54, 43, 36/ 39, 38

1'0" Shale, dark gray to black, medium soft, fissile. No Show.

6'0" Shale, medium to dark gray, medium hard, very sandy, with numerous thin streaks of light gray, very fine grained sandstone. No Show.

5'0" Shale, dark gray to black, medium soft, fissile. No Show.

Core No. 2

2994-3020 — Rec. 18'

C. T. 29, 29, 27, 23, 34/ 48, 40, 39, 26, 20/ 27, 29, 49, 47, 40/ 48, 30, 18, 20, 17/ 16, 16, 16, 15, 12/ 17

* 4'6" Sandstone, dark gray with numerous streaks of light gray, very fine grained, well sorted, micaceous, slightly argillaceous; very slight porosity, questionable permeability. No Show.

3'6" Shale, dark gray to black, medium hard, firm, slightly micaceous, very slightly silty. No Show.

* 3'0" Sandstone, light gray, fine grained, well sorted, rounded grains, very slightly argillaceous, fairly well cemented with argillaceous cement; fair porosity and permeability. No Show.

6'6" Shale, dark gray to black, medium hard, firm, very sandy in top 3 feet, slightly micaceous. No Show.

* 0'6" Sandstone, greenish-gray, medium grained, poorly cemented, fairly well sorted, subrounded grains; numerous fairly large (1/8" to 1/4"), well rounded chert pebbles; very slightly glauconitic; numerous small black minerals giving a salt and pepper appearance; good porosity and permeability. No Show.

Note: * - Analyzed by Chemical & Geological Laboratories.

Core No. 3

3020-3025 — Rec. 13½'

C. T. 8, 17, 22, 20, 10/

*13'6" Sandstone, light gray, fine grained, rounded to sub-rounded, well sorted, porous and permeable, slightly glauconitic; numerous small black specks giving a salt and pepper appearance, no taste or odor; no show.

Core No. 4

4930-4960 Rec. 30'

C. T. 35, 31, 31, 32, 29/ 30, 26, 32, 29, 24/ 32, 32, 29, 26, 26/ 30, 27, 26, 30, 27/ 31, 31, 25, 30, 27/ 24, 27, 24, 38, 101/

8'0" Shale, reddish-brown, medium soft, firm, very slightly silty; occasional thin stringer of fine grained, angular sandstone, very slightly calcareous. No Show.

3'0" Shale, reddish-brown, medium hard, very sandy, with numerous thin streaks of fine to medium grained, angular sandstone, very slightly calcareous. No Show.

19'0" Shale, reddish-brown, with numerous large spots of light grey, medium firm, very slightly calcareous, very slightly sandy, becoming very sandy in streaks; occasional 1/2" streak of gray, medium grained, angular, well sorted sandstone. No Show.

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Core No. 5

4960-4990 Rec. 20'

C. T. 29, 28, 29, 26, 30/ 30, 27, 34, 33, 32/ 31, 38, 32, 20, 21/ 19, 21, 19, 20, 38/ 22, 21, 41, 30, 38/ 33, 44, 38, 36, 42/

18'6" Shale, reddish-brown, with occasional large spot of light gray, medium hard, firm, very slightly calcareous, very silty and sandy, occasional very thin streak of light gray, fine grained sandstone. No Show.

1'6" Limestone, reddish-brown, conglomeratic, very sandy; numerous fairly large, well rounded limestone pebbles. No Show.

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Core No. 6

5006-5021 Rec. 13½'

C. T. 30, 16, 15, 17, 19/ 19, 20, 29, 25, 19/ 20, 24, 22, 26, 24/

* 4'6" Sandstone, light brownish-gray, medium grained, fairly well sorted, subrounded to angular grains, very slightly glauconitic, fair prosity and permeability, fairly well cemented; single fairly well developed, tight, vertical fracture running length of unit; good oil odor and light brown stain throughout; good, even, bright golden fluorescence.

* 4'6" Sandstone, light gray, fine to medium grained, fairly well sorted, angular to subrounded, well cemented with gypsum, fair porosity, and questionable permeability, very slightly glauconitic; single well developed, tight fracture in top 1 foot; unit looks wet. No Show.

4'6" Shale, reddish-brown, soft, fairly firm.

Note: * - Analyzed by Conventional method.

Core No. 7

5550-5573 Rec. 23'

C. T. 46, 37, 19, 50, 45/ 46, 25, 23, 33, 30/ 25, 10, 12, 22, 23/ 28, 25, 28, 26, 22/ 12, 12, 22

1'6" Limestone, brownish-gray, microcrystalline, hard, dense; occasional 1 inch streak of light gray, fine crystalline, porous dolomite bleeding oil, otherwise no show.

1'6" Dolomite, light gray, earthy, very bentonitic; numerous irregular thin black, calcareous shale partings; entire unit looks wet, very slightly porous, questionably permeable. No Show..

0'6" Anhydrite, light gray, very fine crystalline, medium soft; fragmental with some earthy dolomite partings.

8'6" Limestone, light brownish-gray, fine crystalline, medium hard, dense; numerous small white veinlets of selenite; numerous paper-thin black shale partings having slickenside appearance.

2'6" Limestone, light gray, earthy, slightly dolomitic, slightly bentonitic, very slightly porous, questionably permeable; occasional thin irregular black, carbonaceous shale partings. No Show.

7'6" Limestone, brownish-gray, fine crystalline, hard, dense; occasional black stylolite; occasional short, fairly tight, vertical fracture with occasional small vug along fracture bleeding oil; otherwise no show.

1'0" Limestone, light gray, same as above 2'6" unit; no show.

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Core No. 8

5573-5603 Rec. 29'

C. T. 120, 41, 39, 29, 17/ 23, 20, 27, 23, 19/ 20, 22, 21, 21, 21,/ 21, 22, 21, 19, 16/ 24, 20, 24, 31, 25/ 21, 30, 32, 33, 34/

18'0" Dolomite and anhydrite; light gray, earthy dolomite and light gray, fine crystalline anhydrite, very highly contorted; numerous 1" to 2" angular fragments of light gray anhydrite surrounded by earthy dolomite; dolomite looks wet. No Show.

5'0" Anhydrite, light gray, fine crystalline; soft, waxy, occasional paper-thin, calcareous shale parting. No Show.

* 6'0" Limestone, dark brownish-gray, amorphous; dense, except for numerous short, tight, irregular fractures; good oil odor and bright, uneven milky white fluorescence along fracture planes; good oil stain along fracture planes.

Note: * - Analyzed by Chemical & Geological Lab; full diameter.

Core No. 9

5715-5750 Rec. 35'

C. T. 20, 25, 23, 26, 14/ 19, 19, 13, 10, 11/ 11, 18, 26, 25, 50/ 23, 24, 23, 23, 22/ 23, 20, 18, 19, 19/ 28, 22, 21, 23, 22/ 24, 22, 22, 20, 20/

3'0" Anhydrite, medium gray, fine crystalline; numerous paper-thin shale partings. No Show.

* 2'6" Limestone, dark brownish-gray, amorphous to microcrystalline with thin streak of pseudo-oolitic near center of unit, fair vuggy porosity and permeability, spotty, dull golden-yellow fluorescence; fair oil odor; some free oil bleeding from an occasional pin-point vug.

* 2'0" Limestone, dark brownish-gray, microcrystalline, fairly dense, with occasional short, tight fracture; fair oil odor and spotty golden-yellow fluorescence; no show in mass of unit.

* 4'0" Limestone, brownish-gray, fine to medium crystalline, fair intercrystalline porosity and permeability; fair oil odor and fairly even dull, golden yellow fluorescence.

9'6" Anhydrite, light gray, fine crystalline; numerous irregular paper-thin calcareous shale partings. No Show.

* 1'0" Limestone, dark brownish-gray, microcrystalline, fairly dense except for occasional short, tight, vertical fracture and occasional small pin-point vug; very slight oil odor; occasional spot of dull yellow fluorescence in mass of unit with fairly even, dull golden-yellow fluorescence along fracture planes.

* 4'0" Limestone, brownish-gray, microcrystalline, very slight intercrystalline porosity, questionable permeability; fairly numerous small brown calcite crystals; faint oil odor on fresh break; spotty, dull golden-yellow fluorescence; entire unit looks wet.

* 9'0" Limestone, brownish-gray, amorphous to microcrystalline, with occasional thin 2" streak of fine crystalline; dense, with occasional 2" streak having very slight porosity and questionable permeability; faint oil odor and spotty dull golden-yellow fluorescence; entire unit looks wet.

Note: * Analyzed by Chemical & Geological Lab; both full diameter and conventional methods)

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Core No. 10

5850-5901 Rec. 51'

C. T. 35, 31, 30, 25, 23/ 20, 21, 23, 20, 22/ 20, 20, 22, 19, 18/ 20, 18, 21, 19, 18/ 19, 19, 19, 19, 19/ 18, 18, 19, 20, 19/ 18, 18, 16, 9, 10/ 9, 9, 10, 10, 10/ 12, 19, 18, 21, 26/ 26, 28, 25, 25, 25/ 30.

Core No. 10 continued:
5850-5901 Rec. 51'

5'0" Dolomite, dark brownish-gray, microcrystalline, very hard, dense; single thin light gray stringer of fine crystalline anhydrite at top. No Show.

8'0" Limestone, brownish-gray, micro to fine crystalline, medium hard, dense, except for occasional thin tight hairline vertical fracture cemented with selenite; very faint oil odor along some fracture planes; even, dull, golden-yellow fluorescence along some fracture planes.

1'0" Dolomite, dark brownish-gray, microcrystalline, hard, dense; very slightly pyritic. No Show.

0'6" Dolomite and anhydrite, light gray, dolomite, and dark gray anhydrite; fine crystalline dolomite and fine crystalline anhydrite.

1'0" Dolomite, dark gray to black, amorphous, hard, dense, very slightly pyritic. No Show.

1'0" Anhydrite, brownish-gray, fine to medium crystalline, medium hard. No Show.

3'0" Limestone, brownish-gray, fine crystalline, medium hard, dense, very pyritic. No Show.

1'0" Dolomite, light brownish-gray, amorphous to microcrystalline, very hard, dense. No Show.

1'0" Limestone, brownish-gray, fine to medium crystalline, medium hard, dense, very micaceous and pyritic. No Show.

0'6" Limestone, light and dark brownish-gray bands, medium soft, very slight porosity, questionable permeability, fine crystalline, unit looks wet. No Show.

0'6" Dolomite, light gray, amorphous, dense. No Show.

7'0" Limestone, brownish-gray, fine crystalline, medium hard, dense; occasional well-developed tight vertical fracture cemented with selenite. No Show.

* 2'0" Limestone, dark brownish-gray, fine crystalline, medium hard, dense, except for single well developed vertical fracture with fair oil odor and even bright greenish fluorescence along fracture planes; numerous black stylolitic partings. No Show in mass of unit.

*10'0" Limestone, dark brownish-gray, fine crystalline, very slight porosity questionable permeability; fair oil odor on fresh break, even dull, golden-yellow fluorescence; numerous well developed tight vertical fractures throughout, with good oil odor and fluorescence along fracture planes.

Core No. 10 continued:
5850-5901 Rec. 51'

* 1'0" Limestone, brownish-gray, fine crystalline, hard, dense, except for single fairly well developed vertical fracture running length of unit; faint oil odor and fair even dull yellow fluorescence along fracture planes. No Show in mass of unit.

5'0" Limestone, dark brownish-gray, fine crystalline, medium hard, dense, no fracturing and no show.

** 3'6" Limestone, dark brownish-gray, fine crystalline, medium hard, dense, except for several fairly well developed vertical fractures; good oil odor and even milky green fluorescence along fracture planes; all show along fracture planes.

Note: * - Analyzed by Chemical & Geolog. Lab; conventionnal method.
** - Analyzed by Chemical & Geolog. Lab; full diameter (Porosity & Permeability only)

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Core No. 11

5901-5911 (5911' = 5916' SIM) Rec. 8'

C. T. 24, 21, 17, 26, 23/ 25, 30, 27, 25, 35/

7'6" Limestone, brownish-gray, medium crystalline, hard, dense, except for several well developed open vertical fractures with fracture planes covered with 1/8 to 1/4" selenite crystals; fair oil odor and fairly even greenish-yellow fluorescence along fracture planes; well developed fractures seem to have been washed by mud; numerous short, hairline fractures with good oil odor and greenish-yellow fluorescence along fracture planes.

0'6" Limestone, as above, except for absence of any fracturing. No Show.

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Core No. 12

5916-5926 Rec. 11'

C. T. 22, 22, 25, 23, 24/ 23, 25, 24, 22, 27/

* 1'6" Limestone, brownish-grey, fine crystalline, medium hard, dense, very slightly pyritic, single black stylolitic parting, very slightly fossiliferous; faint sulphurous odor on fresh break. No Show.

* 9'6" Limestone, dark brownish-gray, fine crystalline, with numerous coarse brown crystals of calcite; dense, except for several very tight, incipient vertical fractures; occasional black stylolitic parting, very slightly pyritic, slightly fossiliferous; faint oil odor and even, fairly bright, milky fluorescence along fracture planes; all show along tight fractures; faint sulphurous odor on fresh break.

Core No. 13

5926-5937 Rec. 12'

C. T. 35, 30, 25, 30, 29/ 23, 27, 27, 26, 25/ 26

5'6" Limestone, brownish-gray, fine to medium crystalline, with numerous small brown crystals of calcite, very fossiliferous; very hard and dense, except for single short (3") fracture about 3 feet from top of unit; some free oil bleeding from this fracture; good oil odor and bright milky fluorescence along fracture plane; otherwise entire unit is hard and dense.

6'6" Limestone, dark gray to black, micro to fine crystalline; very hard, dense; very fossiliferous with some pyritized spirifers. No Show.

D R I L L S T E M T E S T S

DST #1, 3014-3025, with HOWCO formation packer set at 3014; tool open at 6:51 PM; open for 30 minutes with strong blow of air throughout test; tool closed at 7:21 PM; shut-in for 15 minutes. Recovered: 925' fresh water with no shows of oil or gas, chlorides 600 ppm. IBHFP: 65# FBHFP: 425# SIBHP: 1140# Hydro: 1610#.

DST #2, 5004-5008.50', with Johnston Tool and straddle packers, 1/2" bottom choke, no water cushion; tool open at 1:25 PM, 4-8-53, for 1 hour; no shut-in (not enough space between packers for pressure bomb); tool open with strong blow which decreased to weak blow at end of test. Recovered: 1860' clear salt water with trace of oil in top stand only. Bottom packer failed to effect a complete shut-off. Pressure bomb showed a gradual decrease in pressure.

DST #3, 5592-5603, with Johnston Tool, 1/2" bottom choke, no water cushion; tool open at 5:46 PM, 4-15-53, for 168 minutes; tool closed for 20 minutes. Tool open with good blow, which increased to strong blow in 10 minutes. Gas to surface in 159 minutes; salt water to surface, with slight trace of oil, in 168 minutes. Bottom 90 feet black sulphur water-cut mud. IBHFP: 225# FBHFP: 2775# BHSIP: 2950# Hydro: 3275#.

DST #4, 5901-5916, with Halliburton Tool, 5/8" bottom choke, no water cushion; tool open at 2:32 PM, 4-20-53, for 135 minutes; tool closed for 20 minutes. Tool open with good blow which increased to strong blow in 10 minutes. Recovered: 2433' total fluid; 1147' clean oil, 1286' oil and gas cut mud with free oil. Note: Bottom 248' had more free oil than gas cut mud, no show of water. IBHFP: 60# FBHFP: 930# BHSIP: 988# Hydro: 3380#.

CORE ANALYSIS REPORTS

Well No. East Popler Unit #22 Date March 30, 1953 Lab. No. 33

Formation Muddy Sand Depths 2994-3025

Sample No.	Depth Feet	Effective Porosity %PoreSpace	Permeability Millidarcies Horizontal	Permeability Millidarcies Vertical	Saturations % Pore Space Resid. Oil	Saturations % Pore Space Total Water
	Core No. 2					
1	2994.0-2995	14.9	0.01		2.1	70.5
2	95.0-96.0	9.7	0.03		5.4	84.5
3	96.0-97.0	20.9	0.24		Tr.	55.5
4	97.0-98.0	19.2	1.0		Tr.	38.0
5	98.0-98.5	19.2	0.09		Tr.	58.9
Missing	98.5-3002.0		Not received for analysis.			
6	3002.0-03.0	13.7	0.07		Tr.	70.8
7	03.0-04.0	18.8	0.05		Tr.	51.1
8	04.0-05.0	11.6	0.01		Tr.	71.6
Missing	05.0-11.5		Not received for analysis.			
9	11.5-12.0	23.0	7.5		0.0	40.9
	Core No. 3					
10	3012.0-13.0	24.2	23.0		Tr.	51.7
11	13.0-14.0	24.6	26		0.0	62.2
12	14.0-15.0	26	47		0.0	49.6
13	15.0-16.0	23.5	18		0.0	59.6
14	16.0-17.0	25.6	19		0.0	56.6
15	17.0-18.0	23.5	18		Tr.	46.0
16	18.0-19.0	23.8	14		Tr.	44.1
17	19.0-20.0	23.4	13		Tr.	43.2
18	20.0-21.0	25.3	60		0.0	39.9
19	21.0-22.0	25.3	27		0.0	36.4
20	22.0-23.0	25.3	20		0.0	40.3
21	23.0-24.0	25.0	28		0.0	42.0
22	24.0-25.0	24.9	30		0.0	38.6
	Core No. 6	Formation Heath Sd.		Depths 5006-5015		
23	5006-07	14.8	123		13.2	27.7
24	07-08	13.4	144		10.2	40.3
25	08-09	12.2	110		16.0	47.5
26	09-10	13.8	80		0.7	65.2
27	10-10½	14.9	53		0.0	71.1
28	10½-11	10.6	3.5		0.0	74.5
29	11-12	10.5	12		0.0	69.5
30	12-13	2.4	0.06		0.0	95.8
31	13-14	8.6	11		0.0	69.8
32	14-15	7.8	3.5		0.0	56.4

CORE ANALYSIS REPORTS

Date April 21, 1953 Formation Madison: B-1, B-2, C Zones Depths 5718-5894

Sample No.	Depth Feet	Effective Porosity %PoreSpace	Permeability Millidarcies Horizontal	Permeability Millidarcies Vertical	Saturations % Pore Space Resid. Oil	Saturations % Pore Space Total Water
	"B-1" Zone					
33	5718-5719	8.4	0.46		17.9	52.4
34	19-20	18.2	2.5		4.4	57.7
35	20-21	9.3	1.9		6.5	43.0
36	21-22	0.8	0.07		00.0	12.5
37	22-23	9.1	0.45		9.9	35.2
38	23-24	13.0	2.8		11.5	32.3
39	24-25	10.1	0.53		3.9	67.3
40	25-26.5	10.9	0.54		13.8	35.8
	"B-2" Zone					
41	5736-37	4.7	0.03		19.1	78.7
42	37-38	6.0	0.36		3.3	75.0
43	38-39	19.0	4.2		9.5	57.8
44	39-40	13.2	1.2		2.3	74.2
45	40-41	9.2	0.24		1.1	64.1
46	41-42	8.9	0.21		0.0	49.4
47	42-43	4.5	0.57		0.0	95.6
48	43-44	8.2	0.19		Tr.	59.8
49	44-45	7.8	0.66		Tr.	89.7
50	45-46	9.7	0.90		2.1	74.2
51	46-47	11.3	0.59		Tr.	61.9
52	47-48	7.8	0.26		1.3	44.9
53	48-49	11.5	4.9		4.3	32.2
54	49-50	14.0	2.0		2.9	52.1
	"C" Zone					
55	5882-83	3.6	-0.01		11.7	50.8
56	83-84	10.5	0.01		22.6	26.3
57	84-85	12.1	0.05		40.5	42.5
58	85-86	16.8	0.12		30.8	34.8
59	86-87	13.3	0.08		20.5	49.9
60	87-88	9.4	0.09		48.7	47.9
61	88-89	10.8	0.06		11.5	70.4
62	89-90	10.4	0.07		27.3	44.2
63	90-91	13.8	0.24		22.4	25.5
64	91-92	10.9	0.08		24.1	38.9
65	92-93	8.6	0.03		17.0	55.1
66	93-94	0.6	-0.01		Tr.	62.9

FULL DIAMETER CORESTUDY Formation Madison; "A" Zone Depths 5596-5602 Date April 17, 1953

Sample No.	Representative Of Feet	Midpoint of Sample	Footage	Permeability Radial	Permeability Vertical	Effective Porosity %	Density Bulk	Density Matrix	Saturation %PoreSpace Resid. Oil	Saturation %PoreSpace Water
1	Core No. 8	(5573-5603)	(5596-5602) Test Section							
1	5596-5597		1	F-No Test	20	2.3	2.63	2.69	Tr.	26.1
2	5597-5598		1	5000 -	80	5.0	2.59	2.73	Tr.	18.0
3	5598-5599		1	5000 -	105	7.3	2.49	2.67	8.2	26.0
4	5599-5600		1	1.02	1.5	3.1	2.63	2.72	Tr.	6.5
5	5600-5601		1	378	12	3.9	2.62	2.72	0	10.3
6	5601-5602		1	0.25	1.6	3.4	2.66	2.75	0	11.8
		Formation Madison: "C" Zone	Depths 5915-5926			Date April 23, 1953				
	Core No. 12	5916-5926	Rec. 11 feet							
7	5915.0-5916.0		1.0	-0.01	-0.01	2.1	2.69	2.74	9.5	50.9
8	16.0-17.0		1.0	N.T.*	0.38	1.1	2.68	2.71	Tr.	0.0
9	17.0-18.0		1.0	-0.01	-0.01	1.2	2.68	2.71	Tr.	14.2
10	18.0-19.0		1.0	-0.01	5000 ≠	2.1	2.68	2.74	Tr.	0.0
11	19.0-20.0		1.0	5000 ≠	5000 ≠	3.5	2.66	2.75	0.0	6.9
12	20.0-21.0		1.0	2.4	0.03	2.6	2.66	2.73	Tr.	13.8
13	21.0-22.0		1.0	0.02	0.01	1.5	2.67	2.71	0.0	1.3
14	22.0-23.0		1.0	0.01	-0.01	2.6	2.68	2.75	Tr.	7.3
15	23.0-24.0		1.0	0.09	-0.01	2.7	2.68	2.75	Tr.	14.1
16	24.0-25.0		1.0	-0.01	5000 ≠	3.1	2.65	2.73	0.0	10.6
17	25.0-26.0		1.0	-0.01	-0.01	1.1	2.68	2.71	0.0	7.3

* - No test - Fractured in operation.

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COMPLETION DATA

Total Depth: 5937' Driller equals 5940' casing measurements equals 5942' Schlumberger equals 5940' Lane-Wells. PBTD: 5930' Driller equals 5930' Lane-Wells.

Ran 192 joints (5929.30') 5½", 15.50#, J-55, 8 rd. thd. German and American casing; landed 11.70' below RKB; Larkin float shoe at 5941 and 5908.02; 3 Larkin latch-on centralizers at 5700, 5840 and 5929; one hundred feet (100') of HOWCO scratchers at:

5706 to 5726
5733 to 5743
5752 to 5772
5877 to 5892
5898 to 5908
5912 to 5927
5929 to 5939

Cemented casing with 250 sacks of Pozmix and Ideal cement, mixed with 2% gel. Bumped plug with 1200#; released pressure and held okay. Plug down at 9:30 P.M., 4-22-53. Pipe rotated freely throughout job.

Tested 5½" casing with 1000# for 30 minutes; held okay. Top of cement at 5879' Lane-Wells; float collar at 5906 feet. Drilled to 5930 feet (TD Driller). Conditioned mud to 10.4#. Ran Gamma Ray-Neutron and Collar Log, (TD 5930' Lane-Wells).

Perforated interval, 5908-5918, with four jet shots per foot. (Lane-Wells measurements).

Ran 190 joints (5885.78') of 2 3/8" EUE, 4.70#, J-55, 8 rd. thd. R-2 Youngstown tubing with 3.78 feet perforated nipple bull plugged on bottom; landed 10.20 feet below RKB. Tubing spaced as follows:

Landed below RKB	10.20'
Top joint tubing	31.21'
189 joints tubing	5854.59'
Perforated nipple bull plugged	3.78'
Bottom of tubing	5899.78'

Displaced mud with water, and water with oil; well would not flow. Swabbed displacement oil down to 3000 feet. Swabbed 130 barrels of oil into test tank, (54 barrels displaced oil, 76 barrels from formation), fluid level while swabbing remained at 3000 feet; swabbed only clean oil.

Acidized "C" Zone from 5908-5918 with 1000 gallons of regular acid; formation broke at 2900#. Displaced 5 barrels per minute at 2300#. Displaced acid with oil. Over-flushed 225 gallons of oil, final pressure was 1300#. Flowed new clean oil to surface in 25 minutes. Cleaned to pits for 80 minutes, (did not get any free acid back). CSIP: 925# TSIP: 950#

Turned into tanks at 11:30 A.M., 4-27-53.
Released rig at 12:00 O'Clock noon, 4-27-53.

COMPLETION DATA continued:

SUMMARY OF COMPLETION DATA

Casing:	Ran 192 joints (5929.30') of 5½" casing; landed 11.70' below RKB.
Tubing:	Ran 190 joints (5885.78') of 2 3/8" EUE tubing with 3.78' perforated nipple bull plugged on bottom; landed 10.20' below RKB. Bottom of tubing at 5899.78'.
Perforations:	Perforated interval, 5908-5918, w/4 jet s.p.f. (Lane-Wells measurements).
Acid Treatment:	Acidized "C" Zone w/1000 gallons of Dowell, regular 15% acid.
Type of Completion:	Single producer: "C" Zone flows through tubing.

PRODUCTION TEST DATA

INITIAL PRODUCTION TESTS

(5908' to 5918')

Zone	Hours	Choke	FP	SIP	BS&W	Fluid	Water	Oil	Date
C Zone (Tubing)	2	20/64"	200#		4.4	82.29	3.62	78.67	4-27-53
C Zone (Tubing)	4	16/64"	275#		4.0	132.69	5.31	127.38	4-27-53
C Zone (Tubing)	9	12/64"	475#	835#	14.0	210.95	29.53	181.42	4-27-53
B Zone (Casing)	Closed			925#					4-27-53

MUD PROGRAM SUMMARY

Total Mud Additives Used: Aquagel, 169 sacks; Barafos, 2 sacks; Lime, 4 sacks; Baroid, 28 sacks; Caustic Soda, 32 cans; Driscose, 11 sacks; Tannex, 89 sacks.

Mud Cost: $2567.85
Drayage Cost: $ 97.00

Total Cost: $2664.85

Drilled surface hole to a depth of 1029' with water. Ran and set 24 joints of 9 5/8" surface casing at 1017' without difficulty. Drilled out from under surface with water and used native mud with small additions of Aquagel while coring and drilling to 4000 feet. Began converting to "red" mud with regular additions of Caustic Soda and Tannex at 4000 feet. This mud program was followed to a total depth of 5942 feet with small additions of Lime and Driscose used for water loss control.

Ran 192 joints of 5½" casing and set at 5941' without difficulty. No unusual mud problems occurred while drilling this well.

Mud characteristics while drilling follow:

Depth	Weight	Viscosity	Water loss	PH
1740	9.0#/gal.	32 sec.	50 cc.	10.5
3020	10.45#/gal.	46 sec.	9 cc.	8.0
3715	10.80#/gal.	40 sec.	7.6 cc.	7.0
3940	10.40#/gal.	40 sec.	7.0 cc.	8.5
4484	10.20#/gal.	40 sec.	8.0 cc.	10.5
4770	10.15#/gal.	49 sec.	11.6 cc.	11.5
4961	10.5#/gal.	48 sec.	12.6 cc.	10.5
5065	10.5#/gal.	48 sec.	11.8 cc.	10.0
5303	10.75#/gal.	45 sec.	13.0 cc.	10.5
5509	10.7#/gal.	45 sec.	11.0 cc.	10.5
5640	10.7#/gal.	46 sec.	10.0 cc.	11.0
5835	10.3#/gal.	49 sec.	16.5 cc.	11.0

SAMPLE DESCRIPTION

200-2060	Shale, dark gray, medium soft, firm, slightly pyritic; some soft white sandy chalk.
2060	Sample Top: Niobrara.
2060-2320	Shale, brownish-gray, medium hard, firm, very calcareous; numerous small light brown to tan calcareous specks; some firm, medium gray shale; some dirty white sandy, chalky limestone.
2320-2410	Shale, light gray, medium hard, firm, splintery; trace of pyrite; some dark gray, calcareous shale with numerous small tan specks.
2410	Sample Top: Greenhorn.
2410-2470	Shale, dark gray, medium soft, firm; some medium gray, firm, calcareous shale with fairly numerous small tan to light brown, calcareous specks; trace of white, waxy bentonite; occasional aragonite prism.
2470-2480	Shale, as above, with trace of fine grained, light gray, porous sandstone.
2480-2530	Shale, medium gray, soft, firm; some medium hard, dark gray, calcareous shale; trace of aragonite; some medium to light gray speckled shale.
2530-2570	Shale, light greenish-gray, medium soft; some medium gray, medium hard, calcareous shale with numerous small tan and white specks; trace of dirty white bentonite; trace of aragonite.
2570-2635	Shale, as above, with some light gray, soft, sandy shale; trace of aragonite prisms.
2635-2680	Shale, dark gray, medium soft, firm, slightly calcareous; trace of fine to medium grained, light gray, porous sandstone; trace of pyrite; trace of aragonite prisms.
2680-2720	Shale, dark gray, medium hard, firm, slightly calcareous; some light gray, firm, splintery, non-calcareous shale; trace of white bentonite.
2720-2785	Shale, light gray, medium hard, firm, splintery; some dark gray calcareous shale.
2785	Sample Top: Upper Muddy.
2785-2800	Siltstone, light gray, medium soft, porous and permeable; some light gray, splintery shale; trace of white bentonite; trace of aragonite.

SAMPLE DESCRIPTION

2800-2940 Shale, dark gray, medium hard, firm, non-calcareous; some light gray siltstone; trace of light gray, splintery shale; trace of white bentonite; trace of light gray, fine grained sandstone.

2940-2960 Siltstone, light gray, soft, porous and permeable; some dark gray medium hard, firm, non-calcareous shale; trace of white bentonite.

2960-2975 No samples.

2975 Depth correction: 2975 equals 2982 SLM.

2982-2994 Core No. 1, recovered 12 feet.

2994-3020 Core No. 2, recovered 18 feet.

3020-3025 Core No. 3, recovered 13½ feet.

3025-3050 Sandstone, light gray, fine grained, well sorted, rounded, very porous and permeable; some light and dark gray, firm shale.

3050-3190 Shale, dark gray to black, firm, fissile.

3190-3235 Shale, dark gray, firm, chunky; trace of light gray, splintery shale.

3235 Sample Top: Dakota Silt.

3235-3240 Shale, dark gray to black, firm, slightly splintery; some light gray, coarse siltstone.

3240-3305 Sandstone, light gray, very fine grained, subrounded to rounded, well sorted, fairly well cemented, fair to good porosity and permeability; some dark gray, firm, non-calcareous shale.

3305-3450 Shale, dark gray to black, medium hard, firm; some light gray, fine to medium grained, porous sandstone; trace of pyrite.

3450-3530 Shale, as above, with trace of light gray, fine to medium grained, porous sandstone; trace of pyrite.

3530-3550 Sandstone, light gray, fine grained, rounded to subrounded, well sorted, slightly porous and permeable; some dark gray to black, splintery shale.

3550-3590 Shale, dark gray to black, splintery; trace of fine grained, light gray sandstone.

3590-3610 Shale, as above, with some light gray, fine grained sandstone.

3610-3630 Sandstone, light gray, medium grained, well sorted, subrounded, porous and permeable; some dark gray to black, splintery shale.

3630-3660 Shale, dark gray to black, medium hard, firm, splintery; trace of light gray, fine grained sandstone.

SAMPLE DESCRIPTION

3660	Sample Top: Swift.
3660-3690	Sandstone, light gray, fine grained, well cemented, well sorted, rounded grains, glauconitic, very tight, calcareous; some dark gray, splintery shale.
3690-3745	Sandstone, dirty gray, very fine grained, well cemented, calcareous, glauconitic, slightly micaceous.
3745-3800	Shale, dark gray, medium hard, firm, splintery, calcareous; some light to medium gray, fine grained, calcareous and glauconitic sandstone.
3800-3985	Shale, dark gray and light gray, firm, splintery, slightly calcareous, fissile; trace of light gray, fine grained, glauconitic sandstone.
3985	Sample Top: Rierdon.
3985-4030	Sandstone, light gray, fine grained, well sorted, rounded, well cemented, calcareous, very slightly porous, questionably permeable.
4030-4110	Shale, light gray and dark gray, medium firm, splintery; some medium soft, brownish-gray shale, with numerous small pyrite nodules; trace of firm red shale.
4110-4175	Shale, light greenish-gray, firm, splintery; some brownish-gray soft, chunky shale; trace of dark brownish-red shale.
4175-4200	Shale, brownish-gray, medium soft, slightly pyritic, slightly sandy; some firm, light greenish-gray, splintery shale.
4200-4260	Shale, light gray to greenish-gray, firm, slightly calcareous, splintery; some dark gray, chunky shale; trace of light brownish gray, fine crystalline, dense limestone.
4260-4282	Shale, as above, with some brown, fine crystalline, dense limestone; some very soft, brown, porous limestone with good stain; good bright golden-yellow fluorescence.
4275-4335	Shale, light to medium gray, medium soft, slightly pyritic; some dense, brown amorphous limestone.
4335	Sample Top: Piper Shale.
4335-4365	Shale, dark red, soft, very silty; some splintery greenish-gray, slightly calcareous shale; trace of soft white anhydrite.
4365-4415	Shale, light gray, medium hard, firm, slightly calcareous; some red, silty shale; trace of dense brown and fine crystalline gray limestone.
4415	Sample Top: Piper Limestone.

SAMPLE DESCRIPTION

4415-4450 Limestone, dark brown, amorphous to very fine crystalline, dense; some light greenish-gray, slightly calcareous, splintery shale; trace of pyrite.

4450-4465 Limestone, light gray, very fine crystalline, medium soft, very sandy, approaching a calcareous sandstone; numerous rounded, well sorted quartz grains imbedded in a fine crystalline limestone.

4465 Sample Top: Gypsum Springs.

4465-4540 Shale, greenish-gray, firm, splintery, very slightly calcareous; trace of medium firm, red sandy shale.

4540-4550 Shale, greenish-gray, as above, with some gray granular limestone; trace of soft, white anhydrite; trace of dark red silty shale.

4550-4570 Limestone, dark gray and brown, amorphous to fine crystalline, hard, dense; some soft, light gray gypsum; some dark gray, splintery shale; trace of red silty shale.

4570-4585 Shale, medium gray, firm, splintery, medium hard; trace of dark red, silty shale.

4585-4595 Limestone, light gray, fine crystalline, soft; numerous small crystals of clear calcite; some dark gray, splintery shale; trace of white anhydrite.

4596-4625 Shale, greenish-gray, splintery, slightly calcareous, slightly pyritic; trace of light gray, soft crystalline limestone; trace of reddish-brown shale.

4625-4630 Limestone, tan to light brownish-gray, soft, slightly porous, questionable permeable; numerous small clear crystals of calcite, amorphous to microcrystalline.

4630 Sample Top: Spearfish.

4630-4640 Shale, red, very soft, silty; some soft, white anhydrite.

4640-4650 Sandstone, red, very fine grained, medium hard, slightly porous, questionable permeable; some gray and green shale; trace of white anhydrite.

4650-4670 Shale, greenish-gray and green, medium firm, splintery, very slightly calcareous.

4670-4730 Sandstone, red, very fine grained, very slightly porous, questionably permeable, well sorted, rounded grains; some medium gray splintery, slightly calcareous shale; trace of medium gray, amorphous limestone.

4730-4750 Shale, medium gray, firm, slightly calcareous, slightly pyritic; some red, fine grained sandstone; trace of light gray, medium crystalline, dense limestone.

SAMPLE DESCRIPTION

4750	Sample Top: Amsden.
4750-4770	Dolomite, pink, micro to fine crystalline, medium soft, dense; some medium gray, slightly calcareous, splintery shale; trace of red, fine grained sandstone.
4770-4780	Shale, medium gray, slightly calcareous, splintery; trace of pink crystalline dolomite; trace of red, fine grained sandstone.
4780-4790	Dolomite, pink, fine crystalline, soft, dense; some gray, splintery shale; trace of soft white anhydrite.
4790-4800	Limestone, light gray, fine to medium crystalline, medium hard, very slightly porous, questionably permeable; some brown, dense limestone; some pink crystalline dolomite; trace of soft, white anhydrite.
4800-4810	Shale, medium gray, splintery, slightly calcareous; some light gray, medium crystalline limestone; trace of dense brown micro-crystalline limestone; trace of white anhydrite.
4810-4830	Limestone, light gray, medium crystalline, very slightly porous, questionably permeable; some pink, fine crystalline dolomite; some red, green, gray and purple waxy shale.
4930-4840	Shale, medium gray, splintery, slightly calcareous; some green, red and purple waxy shale; some light gray, medium crystalline limestone.
4840-4875	Limestone, brownish-gray, micro to fine crystalline, dense, slightly fossiliferous; some red, gray, green waxy shale; trace of soft white anhydrite.
4875-4910	Shale, red, green, gray, purple; waxy, splintery; some red and gray variegated; trace of brownish-gray, fine crystalline, fossiliferous limestone.
4910	Sample Top: Heath.
4910-4930	Shale, medium gray, firm, slightly calcareous; some red and green waxy shale; trace of light gray, fine crystalline, fossiliferous limestone.
4930-4960	Core No. 4, recovered 30 feet.
4960-4990	Core No. 5, recovered 21 feet.
4990-5003	Shale, light gray, firm, slightly splintery, very slightly calcareous; some dark reddish-brown, silty shale; trace of reddish-brown, coarse grained, angular, argillaceous sandstone.
5003-5006	Sandstone, light gray, medium grained, angular, well sorted; good oil stain and fluorescence; good porosity and permeability; some gray, splintery, slightly calcareous shale; trace of dark red, silty shale.

5006-5021 Core No. 6, recovered 13½ feet.

5021-5025 Shale, medium gray, firm, very slightly silty; some red, silty shale; trace of fine to medium grained, angular porous sandstone.

5025-5030 Shale, red-brown, medium hard, firm, slightly silty, micaceous.

5030-5040 Shale, light gray, medium firm, slightly silty; some red to brown, silty shale; trace of pink, fine crystalline dolomite; trace of brown, microcrystalline limestone.

5040-5060 Shale, as above, with some light gray, fine to medium crystalline, well cemented, angular sandstone; trace of light brownish-gray microcrystalline limestone.

5060 Sample Top: Otter.

5060-5090 Shale, light gray, firm, slightly micaceous, calcareous; some red silty shale; trace of vivid green, waxy shale; trace of light gray, dense, microcrystalline limestone.

5090-5100 Limestone, light gray and brownish-gray, medium soft, micro- to fine crystalline; some greenish-gray, calcareous shale.

5100-5110 Shale, medium gray, firm, calcareous; some dark gray and brownish-gray, fine to micro crystalline, dense limestone; trace of vivid green-waxy shale.

5110-5120 Limestone, light gray, microcrystalline, dense, slightly fossiliferous; some dark brownish-gray, dense, microcrystalline limestone; some greenish-gray and green shale.

5120-5145 Shale, greenish-gray, firm, calcareous, slightly pyritic; some brownish-grey and light gray, dense, microcrystalline limestone; some brownish-red silty shale; trace of green shale.

5145-5150 Shale, as above, with some soft white anhydrite; trace of gray fine crystalline, dense limestone.

5150-5160 Shale, light gray, medium firm; some red, silty shale; trace of soft white anhydrite; trace of vivid green shale.

5160-5180 Limestone, light gray, amorphous, dense; trace of soft white anhydrite; trace of red and gray shale; trace of vivid green shale.

5180-5185 Shale, red and grey, medium firm, slightly splintery; some dense, gray, amorphous to fine crystalline limestone; trace of vivid green shale.

5185-5215 Limestone, light gray, fine crystalline, medium hard, dense to very slightly porous; some brownish-red silty shale; trace of vivid green shale.

5215	Sample Top: Kibbey Sandstone.
5215-5220	Sandstone, light red, fine grained, subrounded, tight, cemented with gypsum.
5220-5225	Shale, dark brownish-red, firm, silty; some light gray, dense, microcrystalline limestone.
5225-5230	Sandstone, light gray to white, medium crystalline, sub-angular, good porosity and permeability; good oil stain and fluorescence on some sand grains; some red silty shale; trace of light gray, microcrystalline limestone.
5230-5250	Shale, red to brown, silty; some light red, fine grained, tight sandstone.
5250-5255	Sandstone, light gray, medium grained, subrounded, good porosity and permeability; good oil stain and fluorescence; some red, silty shale; trace of light gray, fine crystalline limestone.
5255-5265	Shale, dark reddish-brown, silty, firm; some medium grained, red sandstone; trace of light gray, fine crystalline limestone; trace of pyrite; trace of pink, fine crystalline dolomite.
5265-5300	Sandstone, light red to pink, fine grained, sub-angular, poorly sorted, very slightly porous, questionably permeable; well cemented with soft, light gray to pink anhydrite; some brown-red silty shale; trace of light gray, fine crystalline limestone and pink, fine crystalline dolomite.
5300-5350	Sandstone, light red, fine to medium grained, subrounded, poorly sorted, frosted grains, very slightly porous, questionably permeable; some reddish-brown, silty shale; trace of light greenish-gray, splintery shale.
5350-5360	Sandstone, very light red to pink, very fine grained, silty, tight; some pink and white soft anhydrite.
5360	Sample Top: Kibbey Limestone.
5360-5385	Limestone, light gray, fine crystalline, medium soft; numerous large, dark brown inclusions of dolomite; trace of soft white anhydrite.
5385-5405	Shale, light greenish-gray, splintery, firm; some red, silty shale; trace of red fine to medium grained sandstone.
5405-5450	Sandstone, red, very fine grained, rounded, poorly sorted, frosted grains, tight; some red-brown, silty shale; some greenish-gray, splintery shale; some red siltstone; trace of red, fine-medium grained, poorly sorted sandstone.
5450-5470	Siltstone, red, soft; some greenish-gray, splintery shale.
5470	Sample Top: Madison.

5470-5515 Siltstone, light red, soft; some soft, white anhydrite; trace of dense, fine crystalline, brownish-gray limestone.

5515-5530 Limestone, light brownish-gray, fine crystalline, dense, argillaceous; some soft, white, fine crystalline anhydrite; trace of light gray, dense, fine crystalline dolomite.

5530-5550 Limestone, brown, microcrystalline, dense; some soft, white, crystalline anhydrite; trace of dense, light gray, amorphous dolomite.

5550-5573 Core No. 7, recovered 23 feet.

5573-5603 Core No. 8, recovered 29 feet.

5603-5615 Limestone, medium gray, micro to fine crystalline, hard, dense; some light gray, calcareous anhydrite, slightly pyritic; some light gray, fine crystalline dolomite; trace of red to brown, silty shale.

5515-5627 Limestone, dark brownish-gray, oolitic, medium soft; some gray, fine crystalline, dense limestone; trace of white, soft anhydrite; trace pyrite.

5527-5635 Dolomite, light gray, fine crystalline, medium soft, very slightly porous, very calcareous; some red to brown, silty shale; some gray oolitic limestone; trace of white anhydrite.

5535-5645 Shale, red, brown, very silty, slightly calcareous; some gray, porous dolomite; trace of soft, white anhydrite.

5545-55 Anhydrite, white, soft, fine crystalline; some light gray, fine crystalline dolomite; some brownish-gray, amorphous limestone; some red and brown silty shale.

5655-5665 Dolomite, light gray, fine crystalline, porous, medium soft; some red to brown silty shale; trace of soft, white anhydrite; trace of brownish-gray, dense limestone.

5665-5674 Anhydrite, white, soft, fine crystalline; some red to brown silty shale; some light gray, porous dolomite; trace of dense brownish-gray limestone.

5674-5678 Salt; amorphous, clear, very soft, very anhydritic; some soft white anhydrite; trace of light gray dolomite and dense, brownish-gray, amorphous limestone.

5678-5700 Anhydrite, white, fine crystalline, soft, very salty; some gray dolomite and brownish-gray, amorphous limestone.

5700-5715 Limestone, dark brownish-gray, amorphous, hard dense; some light gray, amorphous dolomite; trace of soft white anhydrite.

SAMPLE DESCRIPTION

5715-5750	Core No. 9, recovered 35 feet.
5750-5765	Limestone, dark brownish-gray, amorphous, dense; trace of light gray, sandy dolomite.
5765-5773	Dolomite, light gray, fine crystalline, porous, sandy; some brownish-gray, amorphous limestone; trace of soft, white anhydrite.
5773-5790	Limestone, dark brownish-gray, fine crystalline, dense; some light gray, fine crystalline dolomite; trace of soft, white, fine crystalline anhydrite.
5790-5800	Anhydrite, light gray to white; soft, fine crystalline; some brownish-gray, fine crystalline limestone; trace of light gray fine crystalline dolomite.
5800-5850	Limestone, brownish-gray, amorphous to fine crystalline; medium hard, dense; some light gray, fine crystalline dolomite; trace of soft, white anhydrite.
5850-5901	Core No. 10, recovered 51 feet.
5901-5911	Core No. 11, recovered 8 feet. Depth correction: 5911 equals 5916 SLM.
5916-5926	Core No. 12, recovered 11 feet.
5926-5937	Core No. 13, recovered 12 feet.

Total Depth: 5937' Driller equals 5940' Casing measurements.

****

Form No. 2

GENERAL RULES
201, 202, 213,
216, 219, 233.1

(SUBMIT IN TRIPLICATE)

TO

OIL AND GAS CONSERVATION COMMISSION
OF THE STATE OF MONTANA
BILLINGS OR SHELBY

NOTICE!
THIS FORM BECOMES A PERMIT WHEN STAMPED APPROVED BY AN AGENT OF THE COMMISSION.

SUNDRY NOTICES AND REPORT OF WELLS

Notice of Intention to Drill		Subsequent Report of Water Shut-off	
Notice of Intention to Change Plans		Subsequent Report of Shooting, Acidizing, Cementing	
Notice of Intention to Test Water Shut-off		Subsequent Report of Altering Casing	
Notice of Intention to Redrill or Repair Well		Subsequent Report of Redrilling or Repair	
Notice of Intention to Shoot, Acidize, or Cement		Subsequent Report of Abandonment	
Notice of Intention to Pull or Alter Casing		Supplementary Well History	X
Notice of Intention to Abandon Well		Report of Fracturing	

(Indicate Above by Check Mark Nature of Report, Notice, or Other Data)

September 24, 19 54

Following is a {notice of intention to do work / report of work done} on land {owned / leased} described as follows:

LEASE 1-37-Ind-12878

MONTANA (State) Roosevelt (County) East Poplar (Field)

Well No. 22 SW SW Section 14 (m. sec.) 28N (Township) 51E (Range) M.P.M. (Meridian)

The well is located 560 ft. {~~X~~ N.} of South line and 660 ft. {E. ~~X~~} of West line of Sec. 14

The elevation of the ~~derrick~~ ground floor above the sea level is 2177 ft.

READ CAREFULLY — DETAILS OF PLAN OF WORK — READ CAREFULLY

(State names of and expected depths to objective sands; show size, weights, and lengths of proposed casings; indicate mudding jobs, cementing points, and all other important proposed work, particularly all details results Shooting, Acidizing, Fracturing).

DETAILS OF WORK
RESULT

SEE ATTACHED SHEETS

RECEIVED
SEP 28 1954
OIL AND GAS CONSERVATION COMMISSION
OF THE STATE OF MONTANA - BILLINGS

APPROVED SUBJECT TO CONDITIONS SHOWN ON REVERSE.

Approved 9-30-54 (Date)

Mark P. Turley

Title Geologist-Engineer

District Office Agent

Company HURPHY CORPORATION

By Harold Milam

Title District Production Superintendent

Address B-13 Behner Building, Billings, Mont.

NOTE:—Reports on this Form to be submitted to the District Agent for Approval in Triplicate.

3

OVER

457

EAST POPLAR UNIT #22 WORKOVER
Section 14, T28N, R51E
Roosevelt County, Montana

OCT 2 - 1954

August 5, 1954: Moving in workover rig to squeeze off "C-3" Zone and re-complete in "C-2" (intercrystalline) Zone.

August 7, 1954: Mixing mud to kill well.

August 8, 1954: Set Baker Model "K" Cast Iron retainer at 5801' on wire line by Lane-Wells. Squeeze No. 1 broke formation with 1200#. Mixed 75 sacks Slo-set cement, maximum pressure 1200#. Would not build up. Cleared perforations with 5 barrels of water. Will wait 6 hours and resqueeze.

August 9, 1954: Stage squeezing. Stage No. 2 mixed 75 sacks, maximum pressure 1000#. Cleared tool and waited 6 hours. Stage No. 3 mixed 100 sacks, maximum pressure 2400#. Would not hold. Cleared perforations and waited 6 hours. Stage No. 4, mixed 100 sacks. Injected cement with 2200# maximum pressure, failed to hold. Cleared tool, preparing to resqueeze.

August 10, 1954: Preparing to perforate "C-2" Zone, Stage squeeze No. 5 with 100 sacks, maximum pressure 2200#, cleared perforation. Stage No. 6 with 100 sacks, pressure built to 4400 with 65 sacks in. Reversed out 35 sacks. Job complete 8:00 P.M, 8-9-54.

August 11, 1954: Preparing to acidize. Perforated "C-2" Zone with Lane-Wells 1 3/4" tubing gun from 5890-95. Tubing open ended at 5896. Swabbed 12 hours. Swabbed tubing dry. No apparent formation fluid.

August 12, 1954: Treated Well with 500 gallons of etching acid. Maximum tubing pressure 2100#. Injection rate of 4 barrels per minute, pressure broke to 1150#. 4½ barrels acid in formation. Bleed down pressure: Casing 650#, tubing 800#. Turned to tank at 8:45 A.M. Flowed to tank 9:15 A.M. Started swabbing at 9:30, swabbed out 7½ barrels acid. Swabbed displacement water 9:30 A.M. to 5:00 P.M. Started showing oil on fourth trip with swab. Average 15 to 20 barrels fluid per hour with 10 to 15 percent oil. After swabbing 12 hours fluid decreased to 2½ barrels per hour with 2 to 5 percent oil. Fluid level 4000'. Shut down swabbing from 4:00 P.M. to 7:00 A.M., 8-12-54. Splicing swab line. CP 150#.

August 13, 1954: Preparing to stratafrac. Well started flowing while repairing swab line. Flowed 6 barrels per hour with trace of oil. Circulated with oil. Flowed 11 barrels oil in 30 minutes, died. Started swabbing. Lowered fluid to 4300'. Swabbing 13 barrels of fluid per hour, 8 percent oil, 92 percent salt water.

OCT 2- 1954

August 14, 1954: Preparing to drill cement retainer set at 4000. Loaded with oil. Stratafrac with 500 gallons jel and 1500 gallons etching acid. Maximum injection pressure, 2900#. Injected 5 barrels per minute, bleed down pressure 900#. Flowed spent acid 8 minutes. Salt water 22 minutes. Flowed 122 barrels salt water per hour with trace of oil, killed well with 10.5 mud. Started in hole with Baker Model "K" Cast Iron cement retainer set at 4000'.

August 15, 1954: Waiting 6 hours to squeeze. Pushed retainer to bottom, started out of hole. 55 stands out started flowing. Went back to 12 stands off bottom. Condition mud to 10.4. Came out of hole, ran Baker Junk Basket on sand line; Ran Baker Model "K" M set at 5870'. Attempted to squeeze with 75 sacks Slo-set. Maximum pressure 1200#. Cleared tool. Will squeeze again 6 hours.

August 16, 1954: Waiting 6 hours to squeeze, condition mud to 9 pounds to release pressure to keep from losing mud while reversed out, attempted to squeeze three times with 50 sacks of Slo-set cement each squeeze. Maximum pressure on last squeeze, 1400#.

August 17, 1954: Squeeze No. 5 with 50 sacks Slo-set, unsuccessful. Maximum pressure 1800#. Waited 6 hours. Squeeze No. 6 with 75 sacks of Slo-set cement. Unsuccessful. Maximum pressure 2000#. Waited 6 hours. Squeeze No. 7 with 75 sacks Slo-set cement, unsuccessful. Maximum pressure 2200#.

August 18, 1954: Preparing to drill cement retainer. Squeeze No. 8, 50 sacks of Slo-set cement. Unsuccessful. Maximum pressure 2400#. Squeeze No. 9, 50 sacks of Slo-set cement. Pressure built to 4600# and held. Squeeze job complete at 7:00 P.M., 8-17-54.

August 19, 1954: Swabbing. Drilled out retainer and cement. Tested perforations 5890' to 95'. Tool open with medium blow 90 minutes. Decreased to weak blow. Ran swab, found 500' fluid in tubing. Recovered on first trip with swab 400', 50 percent oil and 50 percent salt water with trace mud. Approximately 1000' gas on top fluid. Could not recover any fluid second trip. Ran swab every hour for 11 hours. Recovered 1.37 barrels fluid per hour, 50 percent oil first three hours. Decreased to 8 percent oil, 92 percent clear salt water at end of test. Showing gas each trip with swab.

August 20, 1954: Swabbing. Closed test tool 15 minutes. BHSIP--450#. Pull tubing. Ran hook wall packer with 33' tail pipe, set at 5820'. Treated formation with 500 gallons Howco MCA. Broke formation with 2600. Displaced MCA 1/2 barrels minute at 1200#. Let MCA set on formation 4 hours. Open to tank. Flowed 5 minutes, died, swabbed out 12 barrels of spent MCA and 15 barrels salt water, no oil, swabbed dry, dry 3 hours. 4th hour trip with swab found fluid at 1800'. Now swabbing to determine amount and percent oil in field.

August 21, 1954: Pulling tubing to acidize. Swabbed 19 hours. 4½ barrels fluid per hour. 10 to 30 percent oil. Swabbing from 5400' let set 4 hours. Fluid rose to 1500' of surface.

August 22, 1954: Testing, pull tubing. Ran 190 jts. 2 3/8", EUE tubing. 5880' landed 10.22' below old RKB. Open ended bottom tubing. 5890.22. Displaced water with oil. Acidized "C" Zone 5890' to 5895' with 1000 gallons Dowell etching acid. Maximum pressure 1800#. Injected 2 barrels per minute at 1800#. Bleed down pressure 1100#. Open to test tank at 7:15 P.M. Acid to surface 14 minutes. New oil and salt water 35 minutes. Open flow 73 barrels fluid per hour, 25% oil. C.P. 325#, TP. 0#.

20/64" choke	22 BFPH	20% oil, TFP 475#, CP 700#
1/4" choke	14 BFPH	20% oil, TFP 500#, CP 700#
10/64" choke	8 BFPH	20% oil, TFP 500#, CP 700#

Note: Choke plugging with metal from drilled retainer. Total fluid 10 hours testing 185 barrels fluid. Average 21 percent oil, 79 percent salt water.

August 23, 1954: Preparing to squeeze. Tested 1 hour 3/4" choke, 84 BFPH, 20 percent oil. TFP 125#, CP 325#. Flowed 14 hours to tank battery through treater 20/64" choke TFP 150#, CP 550#. 10 percent oil tested in test tank 4:00 A.M. to 8:00 A.M. Average 61 BFPH, 10 percent oil, TFP 150#, CP 500#.

August 24, 1954: Waiting 6 hours to squeeze. Pull tubing. Ran Baker Junk Basket on W.L. Ran and set Baker Model "K" C. I. cement retainer on Lane-Wells W.L. at 5888'. Attempted to squeeze "C" Zone perf. 5890 to 5895' with 75 sacks Slo-set cement. Broke formation with 1200# Maximum pressure 1600#. Cleared tool, reversed out job completed 9:00 A.M., 8-24-54. Will attempt squeeze again in 6 hours.

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August 25, 1954: Squeezing, stage squeeze No. 2 with 75 sacks Slo-set cement. Maximum pressure 1800#. Stage squeeze No. 3 with 50 sacks Slo-set cement. Maximum pressure 2600#. Will squeeze again 9:00 A.M.

August 26, 1954: Swabbing. Squeeze No. 4 with 50 sacks Slo-set cement. Broke formation with 1800#, maximum pressure 4800#. Held okay. Reversed out 8 sacks cement. Job complete at 10:15 A.M., 8-25-54. Let set 12 hours. Reperforated "C" Zone 5882.5 to 5887.5 with Lane Wells 4 JSPF. Acidized "C" Zone 5882.5 to 5887.5 with 500 gallons Dowell etching acid. Broke formation with 2200#. Injected 1 barrel per minute at 2100#. Bleed down pressure 1700#. Open to test tank at 8:18 A.M. Flowed 2 minutes, died, started swabbing.

August 27, 1954: Swabbing. 9:00 A.M. to 9:00 P.M. swabbed 103 barrels load oil fluid level 5000'. 9:00 P.M. to 3:00 A.M. swabbed 33 barrels fluid, 50 percent oil. 3:00 A.M. to 6:00 A.M. average 5.42 barrels fluid per hour, 50 percent oil, 50 percent salt water with trace of mud.

August 28, 1954: Swabbing. From 8:00 A.M. to 1:00 P.M., average 3 BFPH, 50 to 85 percent salt water. Swabbed down fluid level 5600, let set 1 hour. Fluid rose 400'. 2:00 P.M. to 11:00 P.M. average 3 BFPH, 20 to 50 percent salt water with trace of mud. Loaded hole with oil, reacidized "C" Zone, 5882.5 to 5887.5 with 1000 gallons, 15% reg. BJ acid. Injected 1.25 barrels per minute at 2000#. No formation bleed down pressure 1500#. Open to test tank 3:15 A.M. Flowed small stream 15 minutes, died. Swabbed from 4:00 A.M. to 8:00 A.M., recovered 88 barrels displacement oil and spent acid. Last fluid level 3600'.

August 29, 1954: Rigging down. 8:00 A.M. to 8:00 P.M. swabbed average 5 to 7 BFPH, 50 to 65 percent salt water with trace of mud. Fluid level 5500'. 8:00 P.M. to 4:00 A.M. pulled tubing. Put BRL Ancor Shoe 1 jt. off bottom. 4:00 A.M. to 8:00 A.M. Swabbed 39 barrels of fluid. First trip with swab recovered 100 percent oil. Fluid level 3800'. Fluid rose 1700' 8 hours. Second trip with swab 25 percent oil on top. Last trip with swab 80 to 90 percent salt water. Released rig at 8:00 A.M. 8-29-54. Will set pumping unit. Fluid average 132 BFPD, 50 percent oil, 50 percent water with water decreasing.

WORKOVER HISTORY NO. 2

Date January 28, 1957

Lease and Well No. East Poplar Unit No. 22
Field East Poplar Unit County Roosevelt State Montana
Well Location SW SW Section 14, T28N, R51E.

Status prior to Present Job:

Date Completed April 27, 1953 Date last Workover August 29, 1954 TD 5940' PBTD 5888' Producing Zone "C" Zone of Madison Formation Perforations or Open Hole 5882.5 to 5887.5' Cumulative Production Present Zone 12,435 bbls net oil from "C" Zone Latest Test 6 BOPD with 87% water cut.

Justification for Workover:

This well was originally completed in the "C-3" zone but due to an increasing high water cut it was re-completed in the "C-1" zone. Attempts to complete in the "C-2" zone (intercrystalline porosity) were unsuccessful. On completion of the "C-1" zone, the well swabbed 132 BFPD, with 50% oil. Production before this workover was 6 BOPD and 34 BWPD. Acidization was needed to increase the amount of fluid.

Summary of Workover:

1-11-57: PBTD 5888'. Moved in and rigged up pulling unit.

1-12-57: PBTD 5888'. Pulled rods out of hole, circulated well with salt water. Picked up one single of 2 3/8" tubing and washed down to solid bottom. Ran Baker junk basket on swab line after pulling tubing. Started in hole with tubing and Howco type C production packer. Shut down for darkness.

1-13-57: PBTD 5888'. Finished running tubing. Set top of type C Howco production packer at 5877'. Spaced tubing and tested packer, well head and casing with 2700# psi. Held o.k. Acidized C zone perforations 5882.5' to 5887.5' with 2000 gallons Dowell etching acid. Formation broke at 1400 lbs psi back to 500 psi. Injected acid at rate of 5.85 BPM at 450# psi. Bleed down pressure 300# psi. Open to pit at 1:55 P.M. Spent acid to surface in 15 more minutes. Clean to pit, flowed in test tank for 30 minutes on open flow at rate of 1,512 BFPD, 85% water. (227 BOPD, 1285 BWPD). Flowed 1 hour in test tank on 1/4" choke at rate of 774 BFPD, 95% water. (39 BOPD, 735 BWPD). TFP 325#, TSIP 425 #. Opened to Battery. Flowed over night on 14/64" choke, 92% water cut.

1-14-57: PBTD 5888'. Four hour test, 14/64" choke, flowed 715 BFPD, 92% water. (57 BOPD, 658 BWPD).

1-15-57: PBTD 5888'. Two hour test, 14/64" choke, flowed 706 BFPD, 93% water. (49 BOPD, 657 BWPD.)

1-16-57: PBTD 5888'. Two hour test, 1/4" choke, flowed 967 BFPD, 97% water. (29 BOPD, 938 BWPD).

Workover History No. 2 Continued

1-17-57: PBTD 5888'. Four hour test, 12/64" choke, flowed 512 BFPD, 96% water. (20 BOPD, 492 BWPD).

1-18-57: PBTD 5888'. Four hour test, 12/64" choke, flowed 520 BFPD, 96% water (21 BOPD, 499 BWPD).

1-19-57: PBTD 5888'. Four test 10/64" choke, flowed 268 BFPD, 85% water. (40 BOPD, 228 BWPD). TFP 375#.

1-20-57: PBTD 5888'. Four hour test, 10/64" choke, flowed 276 BFPD, 90% water. (27 BOPD, 249 BWPD). TFP 500#.

1-21-57: PBTD 5888'. Four hour test 9/64" choke, flowed 228 BFPD, 91% water. (21 BOPD, 207 BWPD). TFP 425#.

1-22-57: PBTD 5888'. Four hour test, 10/64" choke, flowed 268 BFPD, 91% water. (24 BOPD, 244 BWPD). TFP 425#.

1-23-57: PBTD 5888'. Three hour test, 10/64" choke, flowed 260 BFPD, 91% water, (23 BOPD, 237 BWPD). TFP 425#.

1-24-57: PBTD 5888'. Four hour test, 10/64" choke, flowed 268 BFPD, 91% water, (24 BOPD, 244 BWPD.) TFP 425#.

1-25-57: PBTD 5888'. Four test, 8/64" choke, flowed 114 BFPD, 96% water. (5 BOPD, 109 BWPD.) TFP 400#.

1-26-57: PBTD 5888'. Four test, 10/64" choke, flowed 249 BFPD, 92% water. (20 BOPD, 229 BWPD). TFP 425#. This is the initial potential after workover No. 2.

Final Summary of Workover:

1. Perforations: 5882.5' to 5887.5' (unchanged).

2. Acidization: 5882.5' to 5887.5' with 2000 gallons Dowell etching acid.

3. Final PBTD: 5888' (unchanged).

4. Initial Potential of same zone after workover:
4 hour test, 10/64" choke, flowed 249 BFPD, 92% water, (20 BOPD, 229 BWPD). TFP 425#.

5. Geologic name of producing zone: "C" zone of Madison formation.

6. Down hole equipment: Howco type "C" production packer at 5877'
2 3/8" EUE, 4.70#, J-55, 8 rd. thd. tubing stung into packer at 5877'.

7. Results: The flow rate was increased from an average of 53 BFPD on open flow, 85% water cut, to 1,512 BFPD on open flow, 85% water cut. The water cut varies from 85-95% on different flow rates. The workover was successful in increasing production potential.